SOAP

SANITARY CHEMICALS

DON'T TAKE A CHANCE

Taking a last minute chance on ordering your supplies is a big gamble today when supplies are increasingly difficult to obtain.

Anticipate your requirements and give us sufficient time to fill your order and you won't be "left at post".

Products which are available to the perfumer at reasonable prices:

FLORANOL — A Single Chemical Used in Compounding Rose Odors

OIL OF BALSAM FIR AMERICAN
METHYL NAPHTHYL KETONE LIQUID
PHENYL ETHYL ALCOHOL
VERATRALDEHYDE
IONONE A.B.
IONONE METHYL
PHENYL ACETALDEHYDE DIMETHYL ACETAL
HYDRATROPIC ALDEHYDE
PARA METHYL HYDRATROPIC ALDEHYDE
CINNAMIC ALCOHOL
CYCLAMAL
INDOL

Also a full line of Aromatic Chemicals used for Perfumes—Soaps—Cosmetics

Requests for samples on your firm's letterhead and further information will be promptly furnished.

FOR VICTORY BUY UNITED STATES WAR BONDS AND STAMPS

Aromatics Division

GENERAL DRUG COMPANY

125 Barclay St., New York 7, N. Y.

9 S. CLINTON STREET, CHICAGO 6 1019 ELLIOTT ST., W., WINDSOR, ONT.

Fuld Announces a Startling New Development in the Wax Field!

ROX *Self-Polishing* WAX

- Very Light Color
- Will Not Jell or Solidify
- Transparent . . . Won't Darken Floors
- High Lustre without Buffing
- Non-Alkaline
- Contains no Resins, Shellac or Gums
- Slip Resistant
- High Abrasion Resistance
- Completely Water Resistant
- Tack Free in 20 Minutes
- Easily Removed with Cleanser or Strong Soap
- Good Odor. Does Not Contain Ammonia
- No Sediment on Storage
- Available in Three Grades: Super Heavy Duty Standard

AFTER many months of laboratory research and field tests, FULD announces this altogether *new* and *different* wax formula . . . ROX. Solids consist of wax and emulsifiers only . . . contains no resins, no shellac, no gums of any kind! Extremely stable . . . will not solidify or jell even if stored for long periods. Imparts a long-wearing, highly polished surface without buffing. Here's the answer to your wax prayers! Try it yourself . . . see for yourself that ROX is the finest wax you've ever handled!

Fuld Brothers

702 South Wolfe Street, Baltimore 31, Md.
2444 East 8th Street, Los Angeles 21, Cal.
New York Sales Office: 55 West 42nd Street

Liquid Soaps, Floor Seals, Floor Treatments, Deodorant Blocks, Liquid Deodorants, Plumbing Specialties, Special Cleaners, Self-Polishing Waxes, Powdered Waxes, Oil Soaps, Liquid Cleaners, Disinfectants, Insecticides, Metal Polishes Furniture Polishes, Deodorant Block Holders, Soap Dispensers.

B & Z Library

SANTOMERSE

cleans with hard or soft water

Today . . . in the Arctic or the tropics; in hard water or soft . . . the uniforms of fighting men are cleansed more quickly and more thoroughly because of detergents such as Santomerse. Tomorrow, Santomerse will mean *better* detergents for millions of Americans.

Monsanto Santomerse No. 1, is the modern, all-purpose, surface-active agent and synthetic detergent. It has many uses in the home . . . in washing the automobile or dishes and in the home laundry. And in industry it serves as a detergent and wetting agent in the processing of textiles, metals, rubber, paper; bottle washing, dairy utensil cleaning, metal cleaning, automobile and truck washing; soap manufacture, and numerous other industrial applications.

Present supplies of Santomerse are limited because of extensive war uses, but we believe it will be worth your while to look into the possibilities of Santomerse for the future. We shall be pleased to send technical information and samples. MONSANTO CHEMICAL COMPANY, Phosphate Division, 1700 South Second Street, St. Louis 4, Missouri. District Offices: New York, Chicago, Boston, Detroit, Charlotte, Birmingham, Los Angeles, Cincinnati, San Francisco, Seattle, Montreal, Toronto.

MONSANTO CHEMICALS

SERVING INDUSTRY...WHICH SERVES MANKIND

Volume XXI Number 3

SOAP and SANITARY CHEMICALS

Reg. U. S. Pat. Office

MAR.
1945

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MEMBER AUDIT BUREAU OF CIRCULATIONS

Published monthly by

MAC NAIR-DORLAND COMPANY, INC.
254 WEST 31st STREET, NEW YORK 1, N. Y.

Subscription rate, $3.00 per year. Foreign, including Canadian, $4.00. Copy closing dates—22nd of month preceding month of issue for reading matter and 10th of month preceding month of issue for display advertising. Reentered as second-class matter, Feb. 9, 1938, at Post Office, New York, under act of March 3, 1879. Mail circulation February, 1945, 4076 copies. Total circulation 4200.

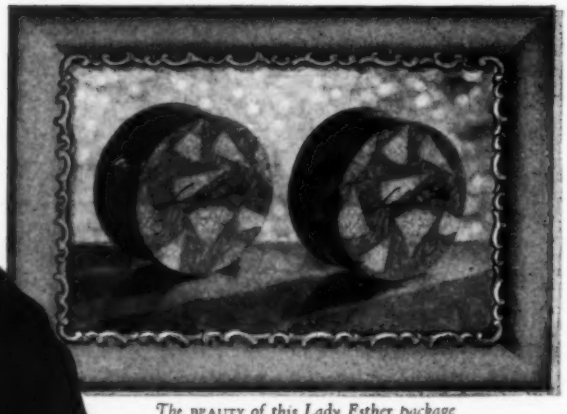
Leslie Brooks
featured in Columbia's technicolor production "*Tonight and Every Night*"

Beauty

DOES IT . . . Every Time

ON THE SCREEN the alluring beauty of Leslie Brooks draws audiences, increases "box office."

OVER THE COUNTER the eye-stopping beauty of an artfully designed package draws buyers, increases sales.



The BEAUTY *of this Lady Esther package helps make sales*—AT THE POINT OF SALE

THE 5 ESSENTIALS OF A SELLING PACKAGE

1 It must be practical, production-planned, economical to manufacture, easy to fill or pack.

2 It must fully protect and conveniently dispense the product.

3 It must be easy to handle, stack, display.

4 It must proclaim the quality and identity of your product.

5 It must be notably "good looking," memorable, ATTRACTIVE!

W. C. Ritchie and COMPANY

8880 Baltimore Avenue, Chicago 17

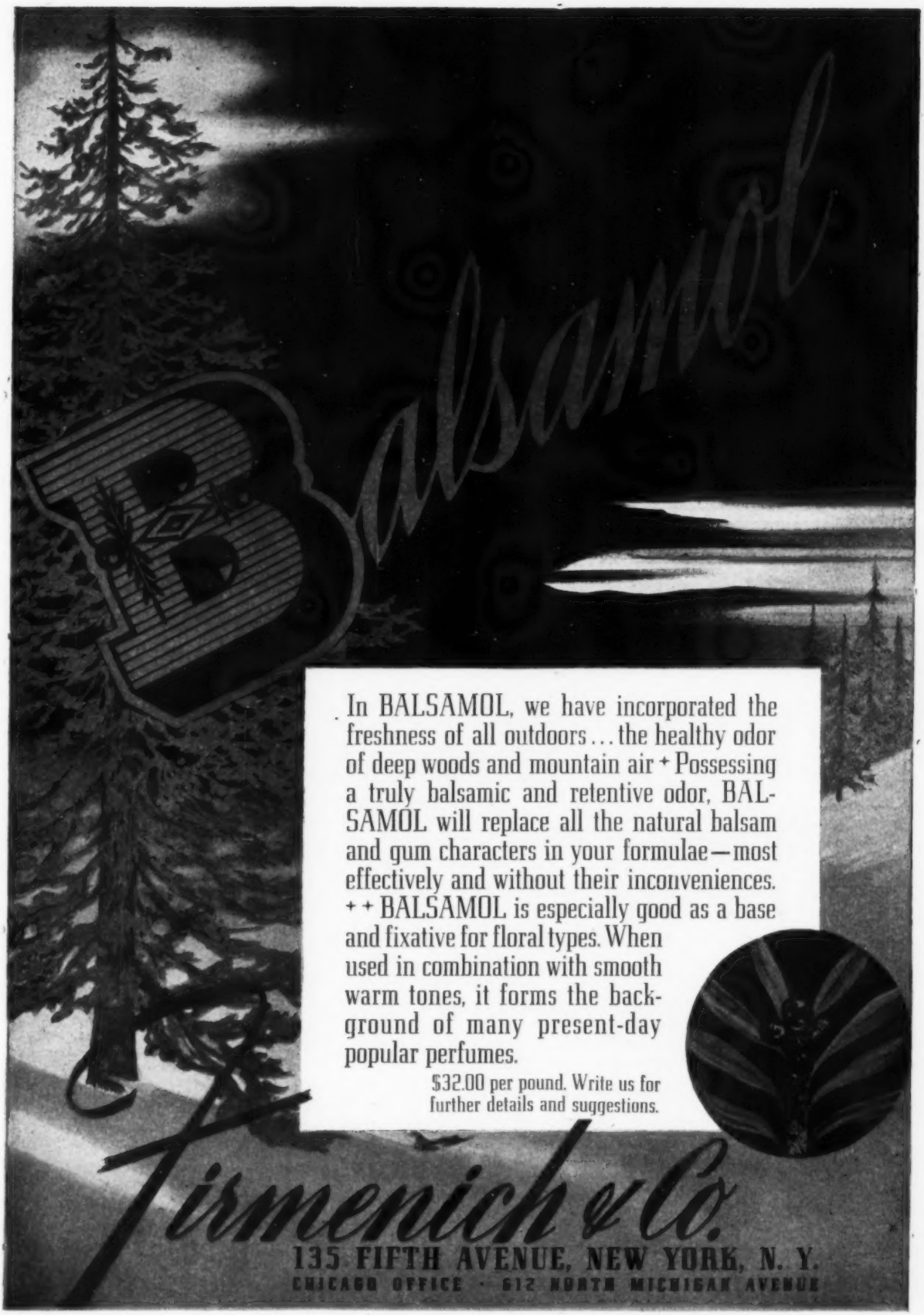
SET-UP PAPER BOXES • FIBRE CANS • TRANSPARENT PACKAGES

NEW YORK • DETROIT • LOS ANGELES • ST. LOUIS • MINNEAPOLIS

SEVENTY-NINE years of packaging experience has taught Ritchie that—with all the complex, practical factors involved in the production of a package—it is always possible *and extremely profitable to add beauty!*

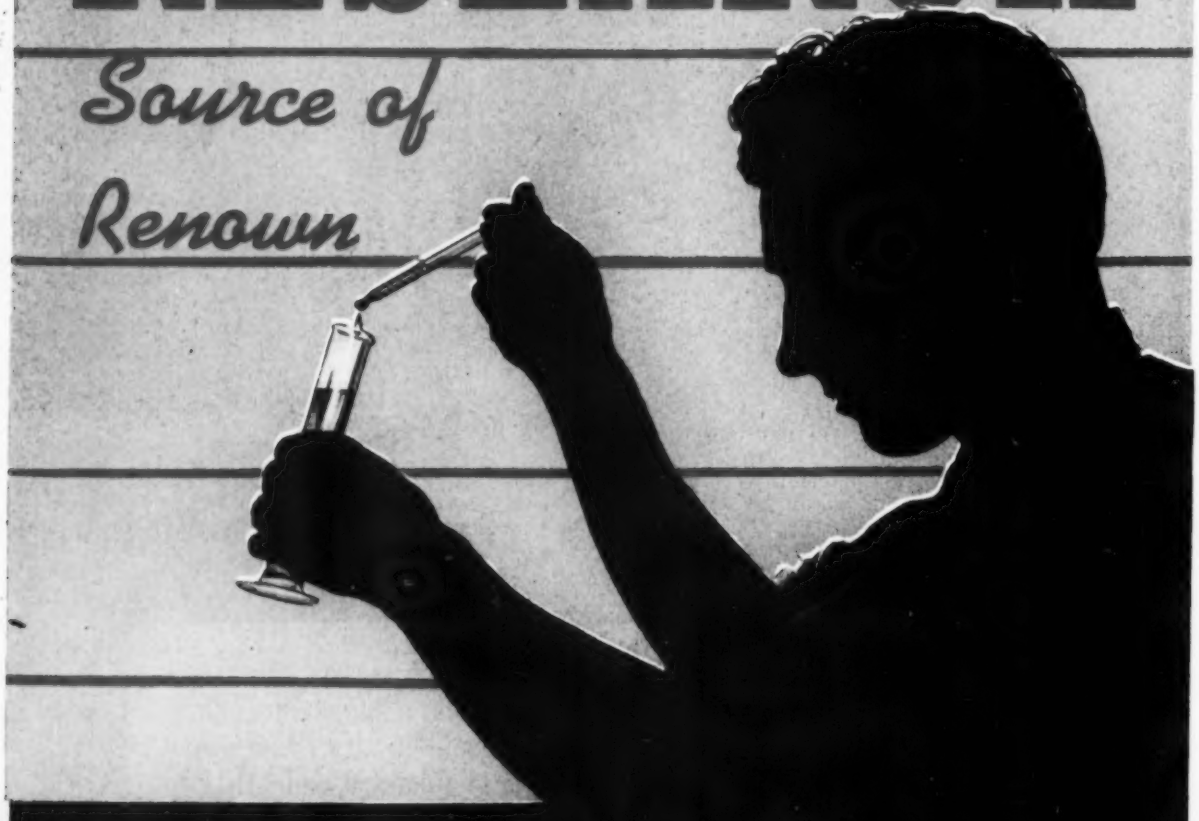
WAY TO A BETTER SELLING PACKAGE

The Ritchie way integrates art and artisanship—to give you a better selling package at a low unit cost. A package that quickly, unmistakably identifies, fully protects and conveniently dispenses your product. A practical, production-planned package—easy to fill or pack, easy to handle, to stack and display—but *above all* designed for eye-appeal, for quality-impression, for *beauty that sells!*


Balsamol
In BALSAMOL, we have incorporated the freshness of all outdoors... the healthy odor of deep woods and mountain air + Possessing a truly balsamic and retentive odor, BALSAMOL will replace all the natural balsam and gum characters in your formulae—most effectively and without their inconveniences. + + BALSAMOL is especially good as a base and fixative for floral types. When used in combination with smooth warm tones, it forms the background of many present-day popular perfumes.
$32.00 per pound. Write us for further details and suggestions.
Firmenich & Co.
135 FIFTH AVENUE, NEW YORK, N. Y.
CHICAGO OFFICE · 612 NORTH MICHIGAN AVENUE

RESEARCH

Source of Renown



We are fortunate to have in our competent Research Department, men of distinction and superior skill. They labor patiently, persistently in their search for different and elusive substances around which our perfumers create new and appealing odors. Their extensive knowledge and willingness to try *unknown* scientific paths are evidenced in the many original soap perfumes we have waiting for you.

VAN AMERINGEN-HAEBLER INC.

315 FOURTH AVENUE **NEW YORK 10, N. Y.**

AT LONG LAST • THE PERFECTED *liquid* RUST-REMOVAL COMPOUND

RUST-EX

SAFELY REMOVES RUST FROM...

HARMLESS TO SKIN, PAINT, CLOTHING

Rust-ex
is harmless to any normal skin non-allergic to specific chemicals. It is equally harmless to clothing and paint—BECAUSE IT IS FREE FROM DANGEROUS ACIDS.
Yet RUST-EX chemically dissolves rust oxides, loosens the scale and removes tarnish as completely as did the highly dangerous old style nitric, sulphuric or muriatic acid, cyanide and similar type compounds.

Easy to Apply
For production items—simply immerse in tank, remove when clean. For maintenance rust removal—dampen cloth, steel wool, or brush and rub rusted surface. Let soak in a few minutes and wipe off loosened scale.

Use Before Painting
Applied before painting, RUST-EX de-scales the surface and prepares it to hold the paint better.

Food Industries
RUST-EX won't contaminate food when used to remove rust from processing equipment—because RUST-EX *is practically odorless.*

Tested in leading War Plants
America's war arsenals employ RUST-EX to remove rust and scale from military equipment valued at hundreds of millions. RUST-EX is now available on suitable priorities. Economical because re-usable and low first cost.

HYSAN PRODUCTS COMPANY, 58 E. CULLERTON STREET, CHICAGO 16

SANITARY CHEMICALS *Hysan*

SELLING EXCLUSIVELY TO JOBBERS AND DISTRIBUTORS

Write for FREE Sample

Norda

Synthetic floral oils . . .

PRESENT reduced supplies of natural floral essences emphasize the value of high quality substitutes. Synthetic floral essences can be used to replace the natural oils with full satisfaction and marked success in numerous products,—toilet soaps, shampoos, shaving creams, powders, creams, and many others.

In fact, in many products the newer synthetic floral essences are to be *preferred* for the manner in which they reproduce the true fragrance of the living flowers in the finished product,—not to mention uniformity of quality and odor fidelity, and their economy under present conditions.

Let us tell you more about these Norda substitutes as an answer to the scarcity of natural floral oils.

NORDA Essential Oil and Chemical Co., Inc.

Chicago Office
325 W. Huron St.

Los Angeles Office
2800 E. 11th Street

St. Paul Office
253 E. 4th St.

Toronto Office
119 Adelaide St., W

New York Office
601 West 26th St.

Montreal Office
135 Commissioners St., W.

CHEMICAL HEADQUARTERS for SOAPMAKERS

Alkalies and Phosphates . . . Westvaco alone provides a single dependable source of supply for all the important chemicals used by soap and sanitary chemical manufacturers. For instance:

Westvaco CHEMICALS

ALKALIES

CAUSTIC SODA
Liquid • Solid • Flake

CAUSTIC POTASH
Liquid

PHOSPHATES

TETRA SODIUM PYROPHOSPHATE—Crystals
Westvaco is the only producer of TSPP Crystals. Rapidly soluble. Give your mixtures "eye appeal". (We also solicit inquiries on TSPP Anhydrous—Granular or Powdered.)

SODIUM TRIPOLYPHOSPHATE—
An old text book chemical, now available in commercial quantities at an attractive price for mixtures. High in Calcium sequestering value, makes suds more stable, helps prevent scum. Samples and quotation on request.

FOSKLOR*
A new chlorinated sodium phosphate for disinfectant—detergent mixtures. Approximately one tablespoonful of Fosklor added to one gallon of water provides 100 ppm. of available Chlorine. Also attractively priced for mixtures. Send for details and samples.

DI-SODIUM PHOSPHATES and TRI-SODIUM PHOSPHATE

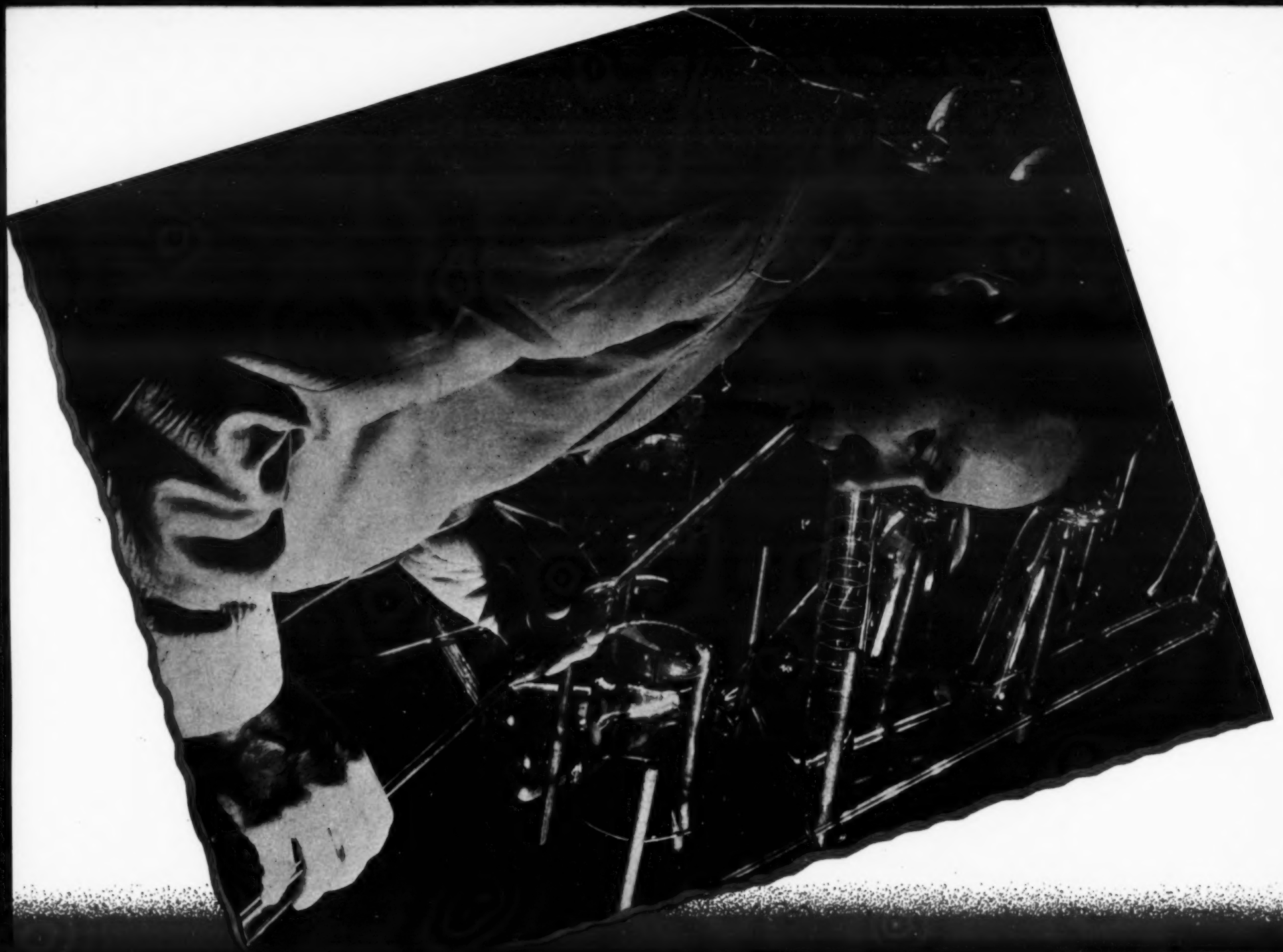
*T. M. REG. U. S. PAT. OFF.

And { **FOR FUMIGATORS—Westvaco is a new source of Methyl Bromide. Write for details.**

FOR JANITOR SUPPLY HOUSES: Carbon Tetrachloride, subject to WPB allocation.

We solicit inquiries. WIRE, WRITE OR PHONE.

WESTVACO CHLORINE PRODUCTS CORPORATION
405 LEXINGTON AVENUE · NEW YORK 17, N. Y.
CHICAGO, ILL. GREENVILLE, S. C. NEWARK, CALIF.



PROGRESS IN THE MAKING...

with Skill by Givaudan

Developing and adapting aromatic and perfume compounds to help manufacturers meet new trends in product odor requirements is a continual service that Givaudan extends. And it is particularly important today for now is the time to plan...soundly...product-wisely...to give your product the odor distinction so important to their success.

Here at Givaudan, long experience, skilled technical staff, extensive laboratory and development facilities are ready to assist in establishing product odor quality and the practical utilization of new developments among aromatic and perfume compounds. We invite your inquiry.

"BUY WISELY...BUY GIVAUDAN"

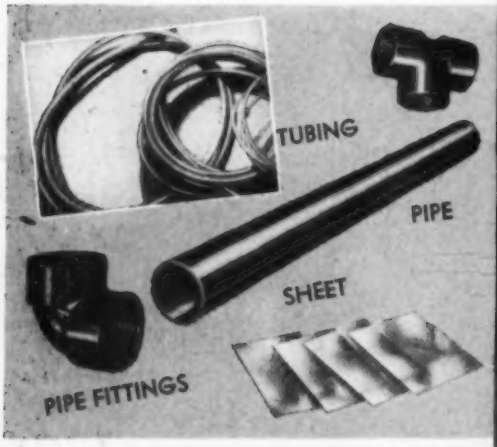
Givaudan-Delawanna INC.

330 WEST 42nd STREET NEW YORK 18, N. Y.

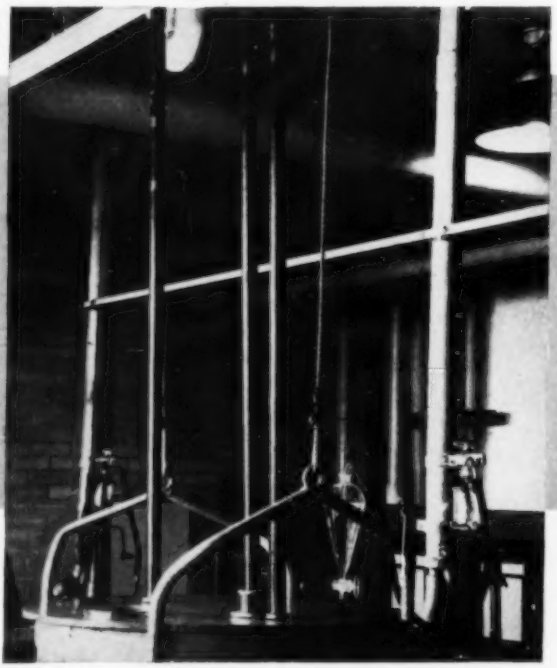
NON-CORROSIVE NON-CONTAMINATING

SARAN can be Specified when Purity is Essential

in the manufacture of drugs, foods, soaps and allied products



Photograph courtesy of Hoffman La Roche Laboratories



Saran is a tough thermoplastic, available in tubing, pipe, sheet, rod and molded fittings. It is light in weight, easily installed, quickly and strongly welded with a few simple tools. It is highly resistant to acids, solvents and most chemicals, has replaced stainless steel, brass and glass pipe in many installations where corrosive liquids are handled and product contamination must be avoided. Its insulating qualities, flexibility and simple methods of fabrication fit Saran for a vast range of industrial applications. Send for Technical Bulletin No. P-11.

*SARAN

U. S. Pat. No. 2160931

HODGMAN RUBBER COMPANY

FRAMINGHAM, MASSACHUSETTS

261 Fifth Ave. New York 16, N. Y. — *173 W. Madison St. Chicago 2, Ill.* — *121 Second St. San Francisco 5*

SHELL REGULAR BASE

Refined to meet the needs of modern household insecticide manufacturers

SHELL

SHELL OIL COMPANY, INC.
50 WEST 50TH STREET
NEW YORK 20, N. Y.

KRANICH SOAPS

CONCENTRATED

LIQUID SOAP
SHAMPOO

☆ ☆ ☆ ☆ ☆

POWDERED SOAPS

Pure Coconut
U.S.P. Castile

☆ ☆ ☆ ☆ ☆

POTASH SOAPS

Soft Potash 40%
U.S.P. XII Green

☆ ☆ ☆ ☆ ☆

Kranich Soap Company, Inc.
55 Richards Street **Brooklyn 31, N. Y.**

KRANICH SOAPS

F A M O U S

Caustic Comments

In the course of conversation at a cocktail party, a tactless woman remarked to the late Alexander Woollcott, "I don't like you . . . I simply cannot bear nitwits."

"You are not at all like your mother, are you?" was Woollcott's caustic rejoinder.

Dow

ONE OF MANY DOW CHEMICALS USED BY AMERICAN INDUSTRY

Caustic Soda

Now let's turn to *Caustic* Soda:
To satisfy industry's constant need for Caustic Soda and other heavy chemicals, manufacturers have come to depend on Dow. Quick shipment is assured by Dow's three plants, strategically located in California, Texas and Michigan.

Dow Technical Advisory Service Available

THE DOW CHEMICAL COMPANY, MIDLAND, MICHIGAN

New York • Boston • Philadelphia • Washington • Cleveland • Detroit • Chicago
St. Louis • Houston • San Francisco • Los Angeles • Seattle

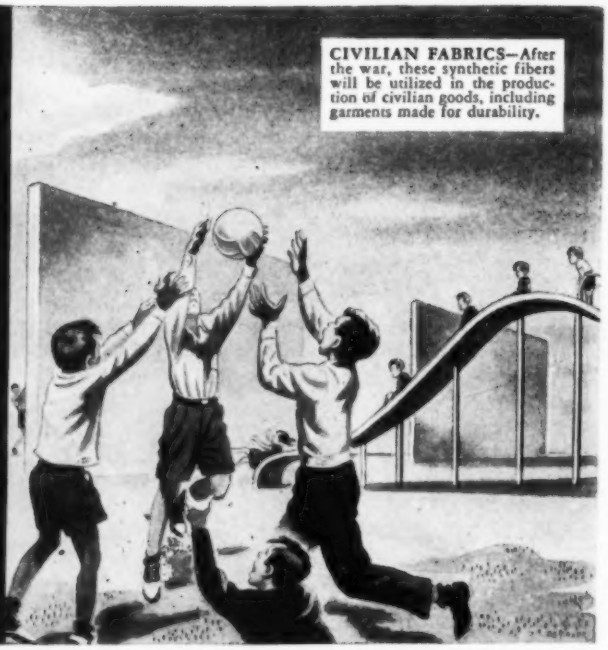
DOW

CHEMICALS INDISPENSABLE
TO INDUSTRY AND VICTORY

SOLVAY*

...KEYED TO TODAY AND TOMORROW!

TEXTILES GO TO WAR! *Nylon* for 'chutes... *viscose rayon* for uniforms... These synthetic fibers earmarked for military fabrics have the quality of ruggedness.



CIVILIAN FABRICS—After the war, these synthetic fibers will be utilized in the production of civilian goods, including garments made for durability.

Today ... Solvay Alkalies are making important contributions to the manufacture of textiles for military needs. Three great strategically located plants are now supplying Soda Ash, Caustic Soda and many related products. Solvay, established in 1881, is the largest source of alkalies in America.

Tomorrow ... New applications of synthetic fibers will aid the expansion of many American industries. Solvay will continue to combine long experience and vast resources for producing alkalies of the highest quality, and will continue to help all industry with its technical service.

SOLVAY

TRADE MARK REG. U. S. PAT. OFF.

**The Solvay Process Company employs salt, limestone and ammonia to make Soda Ash, from which basic material Caustic Soda and other alkalies are derived.*

SODA ASH • CAUSTIC SODA
AMMONIUM CHLORIDE • CAUSTIC POTASH
MODIFIED SODAS • AMMONIUM BICARBONATE
SODIUM NITRITE • PARA-DICHLOROBENZENE
CALCIUM CHLORIDE • CHLORINE • SALT
POTASSIUM CARBONATE

SOLVAY SALES CORPORATION

Alkalies and Chemical Products Manufactured by The Solvay Process Company

40 RECTOR STREET NEW YORK 6, N. Y.

BRANCH SALES OFFICES:

Boston • Charlotte • Chicago • Cincinnati • Cleveland • Detroit
New Orleans • New York • Philadelphia • Pittsburgh • St. Louis • Syracuse

Ever see a drum taking a bath?

GALVANIZING is no job for a novice. At RHEEM it takes five skilled men to make sure a single drum has the right kind of bath in a kettle of molten zinc. The coating must completely and uniformly cover the drum, inside and out.

Hot dipped galvanizing adds protection to a drum . . . gives it a corrosion-resisting lining and safeguards the contents from contamination... makes it possible for the drum to be used over and over again.

If your product, or your plans call for steel shipping containers of any size . . . light or heavy gauge . . . plain, lithographed or galvanized . . . or with baked protective linings . . . look to RHEEM for your answer. Call upon the nearest RHEEM office.

RHEEM'S nation-wide network of plants is prepared to deliver drums where and when you want them.

Rheem

Your Product Deserves the Protection of a Rheem Container

RHEEM MANUFACTURING COMPANY

Executive and General Sales Offices

NEW YORK · SAN FRANCISCO · LOS ANGELES · CHICAGO · WASHINGTON, D.C.

15 Plants Cover Every Major Market in the U.S.A.—3 Plants Serve Australia

Yesterday, Today and Tomorrow... Uniform High Quality

Every shipment of Hooker Chemicals measures up to high standards of uniform purity. You can always depend upon this from Hooker. In these days when so many of your needed supplies are difficult to obtain, you can't afford to take chances with materials of doubtful purity.

Below is a partial list of Hooker Chemicals extensively used by manufacturers of soaps, insecticides and sanitary preparations. While we may not at the moment be able to supply you with the quantities you need—what we can give you will be of the uniform high quality you want.

PRODUCT	HOOKER SPECIFICATIONS
Benzoate of Soda, C_6H_5COONa Grades—U.S.P. and Technical	Benzoate of Soda ..... 99+% U.S.P. grade meets requirements of the U.S. Pharmacopoeia XI
Benzoic Acid, C_6H_5COOH Grades—U.S.P. and Technical	Benzoic Acid ..... 99.3% min. U.S.P. grade meets requirements of the U.S. Pharmacopoeia XI
Benzoyl Chloride, C_6H_5COCl	Freezing Point ..... —0.9°C min.
Cyclohexanol, $C_6H_{11}OH$	Cyclohexanol ..... 98% min. Distillation Range, 100% ..... 2°C max.
Methyl Benzoate, $C_6H_5COOCH_3$	Ester Content ..... 99.5% min. Specific Gravity, 15.5°/15.5°C ..... 1.0930 Distillation Range ..... 2°C max.
Methyl Cyclohexanol, $CH_3C_6H_{10}OH$ Technical Grade	Specific Gravity, 15.5°/15.5°C ..... 0.924±.003 Distillation Range, 100% ..... 25°C max.
Sulfur Dichloride, SCl_2	Chlorine Content ..... 66% min.
Sulfur Monochloride, S_2Cl_2	Chlorine Content ..... 50% min.

The Hooker General Products List gives brief descriptions, packaging information and data on these and the other Hooker Chemicals. Copies are available when requested on your letterhead.

HOOKER CHEMICALS

HOOKER ELECTROCHEMICAL COMPANY

Buffalo Ave. and Union St., Niagara Falls, New York

NEW YORK, N. Y. • WILMINGTON, CALIF. • TACOMA, WASH.

Bleaching Powder	Ferric Chloride	Caustic Soda
Paradichlorbenzene	Trichlorbenzene	Muriatic Acid

AT THE TIPS OF YOUR FINGERS

Literally, D&O are as near to you as your phone or your mail chute! We stand ready with the intensive experience of a century and a half to assist you in solving your perfuming problems.

The Aromatics and Essential Oils of highest quality, produced in our competent laboratories, have earned the continuous confidence of countless customers in the Industry.

"Noblesse oblige"... and we've never failed a customer yet!

D&O

Dodge & Olcott Company

180 VARICK STREET, NEW YORK 14, N. Y.

BOSTON • PHILADELPHIA • CHICAGO • ST. LOUIS • LOS ANGELES

Plant and Laboratories: Bayonne, N. J.

TO COMPANY PRESIDENTS:

Here's Another
BIG CHANCE FOR YOU
to "Pass the Ammunition!"

Today—thanks largely to you and other industrial executives—22,000,000 civilian workers are speeding victory and achieving postwar security through the Payroll Savings Plan. Over 60% of the 6th War Loan subscriptions came from this source—and, between drives, this forward-looking plan has been responsible for 3 out of 4 War Bond sales!

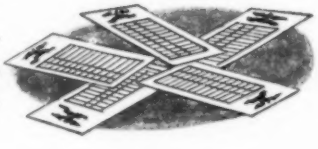
Good as this record is, the Payroll Savings Plan can be still more effective. Believing this can best be accomplished by giving Bond buyers a definite idea of the many benefits accruing to them, the War Finance Division has prepared a variety of active aids for employee education.

This new "ammunition" includes:

a—An entertaining, swift-paced moving picture, graphically showing the importance of buying—and holding—War Bonds.

b—An interesting, easy-to-read booklet, explaining how War Bonds may be accumulated to provide education for children, homes, retirement incomes, etc.

c—Attractive, handy War Bond envelopes, enabling Bond holders to note each separate purchase—and the specific purpose for which each Bond or group of Bonds was bought.



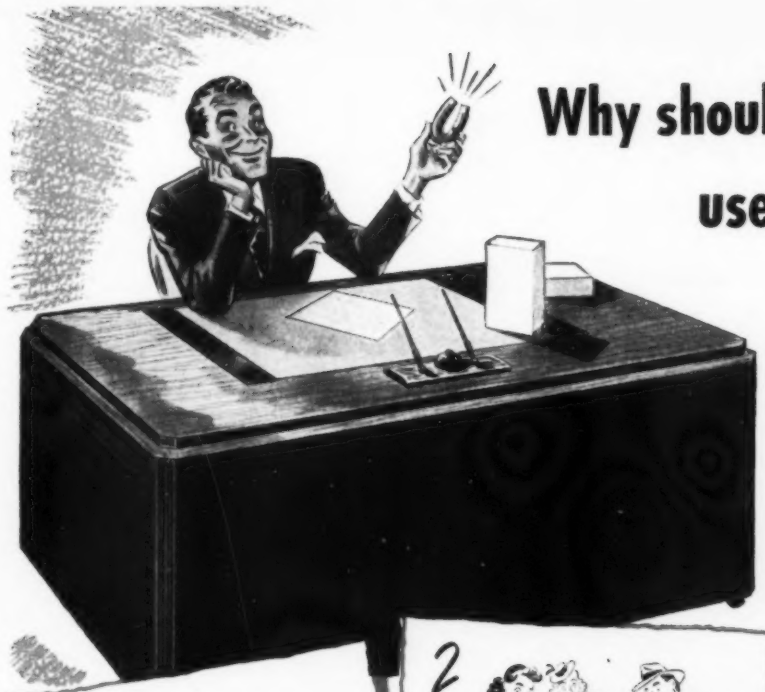
Passing this particular ammunition requires that you reappraise your own company's Payroll Savings Plan. Have your own War Bond Chairman contact the local War Finance Committee—today! They will welcome the chance to discuss this new program with you.

The Treasury Department acknowledges with appreciation the publication of this message by

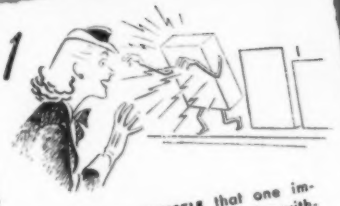
SOAP AND SANITARY CHEMICALS

This is an official U. S. Treasury advertisement prepared under the auspices of Treasury Department and War Advertising Council

Why should a folding carton user keep a magnet on his desk?



1

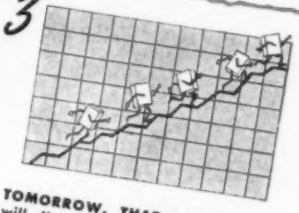


TO REMIND HIMSELF that one important way to get extra sales without extra sales expense is to see that his cartons have more point-of-sale "magnetism"...more power-of-attraction than his competitors'.

2

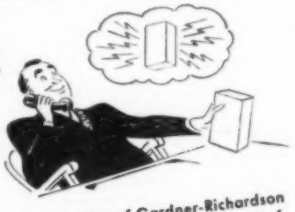
MILLIONS OF DOLLARS' WORTH of merchandise is sold, every year, on display, alone. In thousands of stores, impulse or "pick up" sales account for more than 50% of the volume rung up on the cash registers.

3



TOMORROW, THAT PERCENTAGE will climb even higher. More supermarkets, more self-serve departments, more open shelf and counter displays will put a bigger than ever share of the selling job on your package.

4



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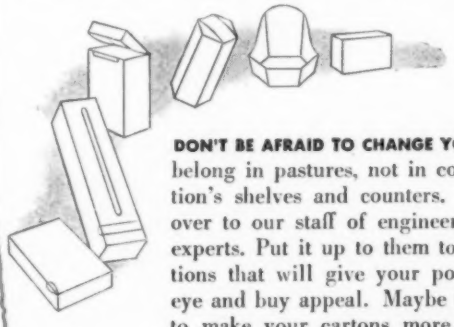

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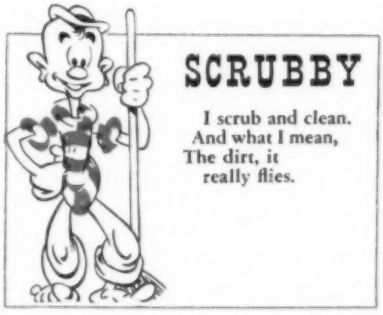

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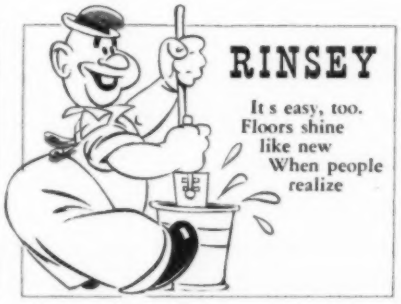
really flies.



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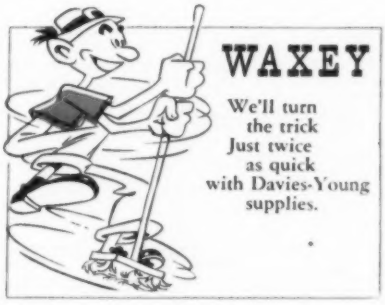

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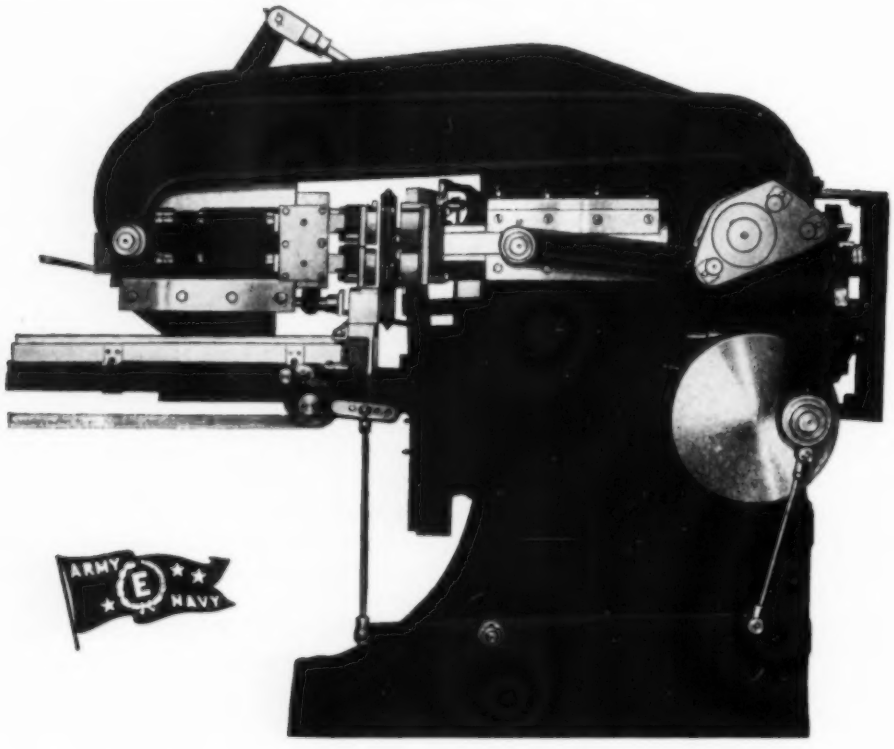

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AS THE EDITOR SEES IT

THAT manufacturers as a whole are in accord with the basic principle of war-time price control is unquestioned. That price regulation to prevent the same inflation which characterized every previous war period in American history is necessary, they do not doubt. At the same time, it is no secret that many manufacturers are suspicious of OPA, suspicious that its true aims are not always those publicly accredited to it. Some critics believe that they detect evidence of a foundation for a permanent structure to regiment prices and marketing being built under the guise of war-time necessity. Others fear that the current "profit squeeze" by OPA is merely the first step to eliminate all profits from enterprises producing civilian goods. Still others hesitate to supply OPA with confidential figures on costs and other intimate financial details for fear that the information may leak into the hands of competitors.

These represent but a few of manufacturers' fears. The first two are indeed mostly speculation, but the possibility of information leaks is not remote. The wide turnover in OPA personnel, including those in key jobs, and the return of many to positions in private industry naturally cause doubts to arise in the minds of manufacturers who are called upon to furnish the most confidential type of information. Next month, the individual in OPA to whom we supply our figures may take a job with one of our competitors. That this sort of thinking is not uncommon, everybody knows,—and it is also applied to WPB and other government agencies as well. And it may explain to a degree why some manufacturers are hesitant to cooperate in the Financial Reporting Program of OPA.

In addition, and in spite of their belief in the necessity for basic price control, manufacturers have the feeling that the very information which they supply may be used against them by OPA. With this suspicion also in mind, the difficulties of OPA in obtaining accurate cost data on which to establish equitable price structures is quite apparent.

REACTIONS of soapers to the recent reduction of soap fat quotas by WFA were varied. Some feel that the cut from 90 per cent to 85 per cent of 1940-41 fat use will be sufficient to induce a serious civilian soap shortage before the year is out. Others indicate that it will make little or no difference as they have been unable because of labor and material shortages to operate up to full quotas on the 90 per cent basis anyway.

The opinion was also expressed that a soap buying panic is unlikely. Even though soap stocks of some wholesalers and retailers are reported low, the average home is well stocked. Soap lends itself readily to hoarding and the average housewife took advantage of this fact and loaded up during and following the soap shortage of 1943. Her reserves, estimated to be heavy, represent the most effective retarding influence to panicky buying. They also represent, it has been noted, a potential headache of rather large proportions for the soap industry during the first year or two following the resumption of normal production and distribution,—that is unless they are gradually reduced by a prolonged soap shortage.

If government agencies actually take delivery of the tonnage of soap this year

which they state is needed for the armed forces, lend-lease, and other purposes, we cannot see that it will make any material difference whether the quota figure stands at 85 or 90 per cent. There simply will not be enough fats or kettle capacity to fill the bill, and civilian soap supplies will not be produced at or near the 85 per cent figure set by WFA.

A FURTHER reduction of five per cent in the permitted use of fibre shipping containers by soap manufacturers adds one more problem to the growing 1945 soap industry list. An amendment to L-317 by WPB has cut fibre board use by makers of soap products to 95 per cent of the corresponding quarter of 1944. Although this reduction did not come as a surprise to most soapers, the pinch will be no less severe. The fact that the wood pulp situation has been deteriorating steadily for the past year has been quite generally known. If output does not increase and halt the shrinkage of reserve pulp stocks, a further paper board cut for the second quarter is not unlikely. However, pulp producers are reported making desperate efforts to expand logging operations through wider use of war prisoners. And herein rests a hope for more shipping containers later in the year.

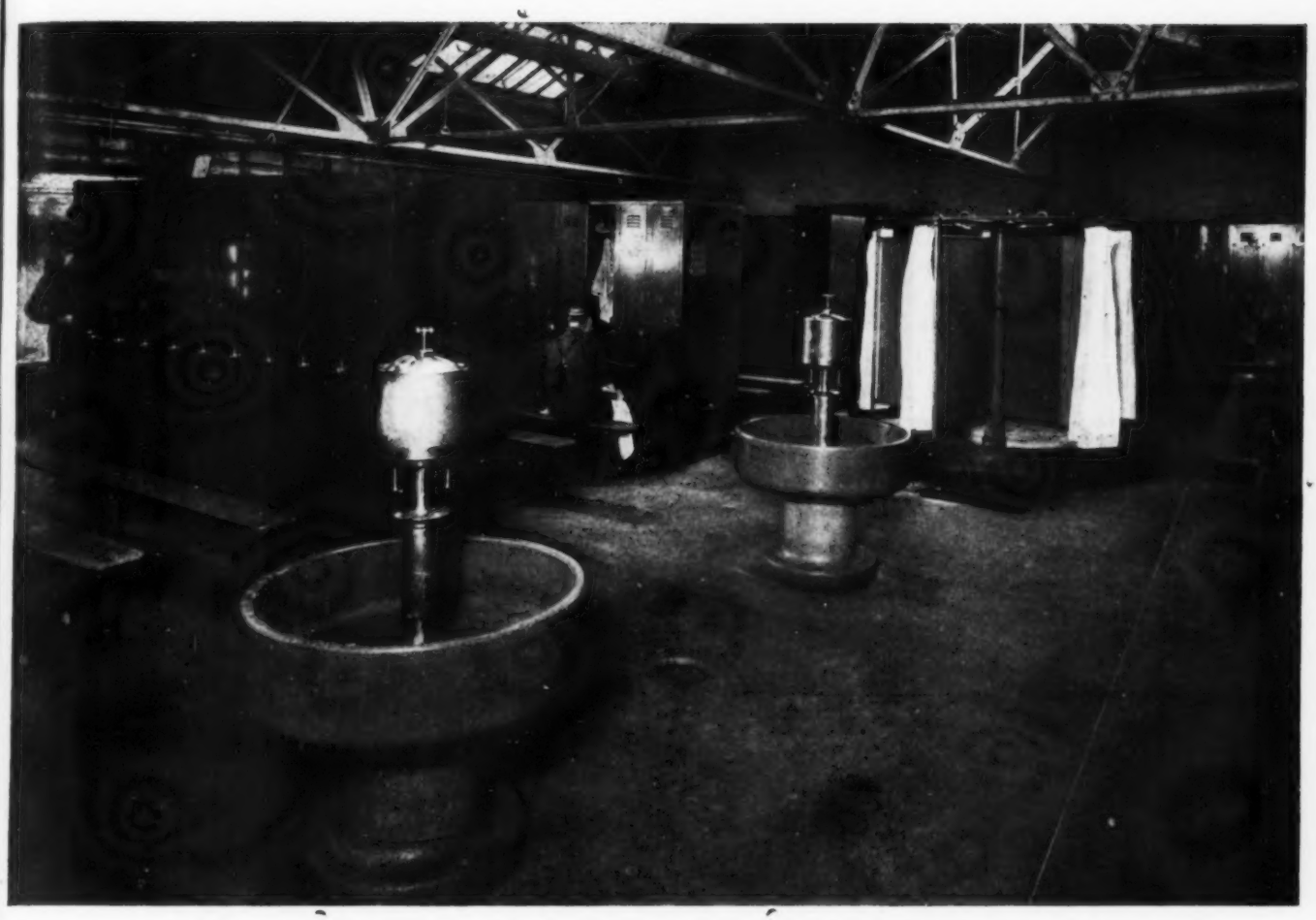
CLOSE to thirty per cent of all soap produced during 1945 is needed for government uses directly connected with the war, according to the Association of American Soap and Glycerine Producers. Soapers who are not turning out this proportion of their production for government needs are not doing their share. But the government must and will get its requirements of soap, the Association in effect goes on to state, noting also that government procurement officers generally are not pleased with the soap situation.

For some time, it has been no secret that government agencies have been more than displeased by the manner in which some soapers have avoided accepting government business. Whether the original fault lies with the government in not classifying soap manufacture as "essential" or not is at the moment beside the point. The fact remains that procurement officials are showing an inclination to become tougher, —to obtain sufficient supplies voluntarily, but lacking that, to obtain sufficient supplies by the exercise of wartime powers. Thus far, we must all admit, they have been both patient and considerate of the problems facing every soaper. But their job is to get the soap. And in order to do just that, we have a hunch that they are about ready really to apply the pressure.

FROM Chicago, came a daily press report recently that although the reduction in fat quotas placed soap supply and demand in very delicate balance which might be readily upset by any unusual consumer demand, there will be no rationing. The statement was credited to "spokesmen" for the soap industry. Specifically, in regard to rationing, these "spokesmen" were quoted as saying: "But whatever happens, there will be no rationing."

The substance of the statement in itself is of secondary importance. Almost everybody knows by now that there is little likelihood of soap rationing, that the problems of administration would probably sink any such plan. Nevertheless, to make this statement baldly is assuming a certainty which should be reserved exclusively for death and taxes.

To date, OPA has not committed itself definitely on soap rationing. Whether there is never to be soap rationing, "whatever happens," is for OPA to determine and announce, not for any "spokesmen for the soap industry." Such presumption is not calculated to aid the case of the soap industry in Washington.



INDUSTRIAL HAND CLEANERS

By

Milton A. Lesser

MORE and more these days one hears talk of the importance of industrial hand cleaners. Only a few years ago such talk would immediately have led to thoughts of abrasive-soap mixtures or perhaps to special liquid soaps. Today several other factors, brought in by dermatologists and public health workers, have entered the picture, and their views are getting the attention of both soap manufacturers and industrial management.

In a sense, therefore, any discussion of hand cleaners for industrial workers should be divided into two phases. The first should cover the established and widely used abrasive cleaners, liquid soaps, powdered soaps and solvent soaps employed in plant and factory wash rooms. In the second part, one must consider the newer views and products resulting from studies of industrial safety and the occurrence of occupational skin diseases.

Despite the disapproval of some industrial physicians, soap cleaners containing abrasives have attained and retained their position with workers because they do the job that is expected of them—namely, the thorough and efficient removal of grime, oil and grease (1, 2). This fact is recognized by dermatologists (3) who frankly concede that until another equally effective and quick method is offered and workers are educated with regard to it, abrasive or grit soaps will continue to be popular.

Such soaps, sometimes known as pumice or sand soaps, are marketed in cake, paste and powder forms. Pumice is the most widely used abrasive and American pumice has been found to be the equal of and, in some respects, superior to the Italian grades, at least insofar as its use in abrasive soaps is

concerned. Sand is another frequently used abrasive, and while cheap, it has a much harsher action on the skin than pumice. Marble dust and seismotite (volcanic ash) are both quite extensively employed. They are softer than pumice and are also less effective abrasives for removing grime. Sawdust and wood flour are sometimes employed in abrasive soaps, but are considered more as fillers than as abrasives. These are usually used in conjunction with a more effective agent like pumice. During recent years, cornmeal has attracted attention because it combines good abrasiveness without certain objectionable features of the inorganic abrasives (1).

Another interesting trend is the employment of common salt and borax as ingredients of industrial cleaning powders. In the dry state they have mild abrasive properties; this quality persisting long enough during washing to facilitate the removal of adherent dirt and grease. Since they eventually go into solution, these materials have the advantage of not clogging drains—no mean consideration these days.

Cake grit soaps are generally made by crutching a very fine abrasive, like pumice or "silver" sand, into a cold-made or semi-boiled soap made from coconut oil or palm kernel oil or a mixture of such oils with tallow or other fat. After the soap is set, it is slabbed, cut into cakes, dried slightly, pressed into shape and packed (4, 5). Requiring rather elaborate equipment, the manufacture of such cake products does not readily lend itself to small-scale production. One criticism leveled against abrasive cake soaps is the observation that they do not readily release the abrasive, so that more effort is required to get the desired results (1).

Paste products are probably the most popular of the abrasive hand cleaners and dozens of formulas for making them are available in the technical sources. The selection of the proper abrasive is a prime consideration in making such paste products if irritation to the skin is to be avoided. These paste soaps, generally known as grit paste soaps, mechanic's hand soap or sand soap, are usually made by dissolving the soap base in two to three times its weight of hot water and mixing in the desired amount of abrasive. This may range from as high as 50 per cent to as low as 10 per cent. Glycerine is generally added to keep the paste soft and prevent drying and also to add certain desirable emollient qualities. Occasionally a small proportion of a solvent is added to improve grease-removing action. Perfume and color, usually pink or blue, is generally included. Paste soaps may also be made by crutching the abrasive, gylcerine and other ingredients directly into a potash or potash-soda soap (4).

A typical formula for making an abrasive hand paste, as given by Thomssen and Kemp (5), is as follows:

	Parts
Soap chips	100
Water	200
Pumice or sand	150
Sodium silicate	25
Glycerine	10
Perfume	5

Another rather typical mechanic's hand soap paste may be made from the following ingredients; varying the amount of water during mixing to provide a softer or heavier paste, as desired (6):

Water	1.8 qts.
White soap chips	1.5 lb.
Glycerine	2.4 oz.
Borax	6.0 oz.
Dry sodium carbonate	3.0 oz.
Pumice powder	2.2 lb.
Perfume	sufficient

The patent literature, especially foreign patents, gives somewhat similar formulas. In one instance, (7) a detergent for the hands is made by mixing a large proportion of sawdust with soap powder, powdered pumice, glycerine soap and turpentine. In another case, (8) cleansing pastes are made by mixing together 7 to 9 parts of liquid toilet soap, 48 to 52 parts of potash soft soap, 52 to 56 parts of powdered pumice and about 0.125 parts of lemon grass oil.

POWDERED hand abrasive soaps also command a respectable market. These are generally mixtures containing about 10 to 25 per cent of powdered soap; about 2 to 5 of alkaline salts like borax, soda ash, trisodium phosphate, and solium metasilicate, plus abrasives such as pumice, soapstone, silica, sawdust, cornmeal or others. Perfumes are frequently added. (4) An illustrative formula, as given in Bennett's (6) text, contains:

	Parts
Olive oil soap	25.0
Borax	25.0
Trisodium phosphate	17.5
Double-ground tripoli	125.0

Slightly different in that it contains sodium perborate as an added whitening agent, is the hand cleaning powder suggested by Crowley: (9)

	Parts
Sodium perborate	17.5
Finely powdered pumice	7.5
Powdered soap	75.0
Finely powdered kaolin	100.0

Where a product with emollient constituents to counteract any harsh abrasive or other effects is desired, the following product (6) will probably serve:

	Parts
Sawdust	40
Finely powdered pumice	20
Wool fat	5
Pine oil	10
Powdered hard soap	10
Sodium carbonate	10
Sodium metaphosphate	5

Quite recently, British research workers (10) reported that a washing compound containing approximately 75 per cent of borax and 25 per cent of dry soap provided a good hand cleaner that would remove dirt from the hands effectively and economically. The borax, in granulated form to prevent caking, was indicated as providing a temporary abrasive action as well as detergent and slight water-softening properties of its own. The composition was said to possess desirable fungicidal properties and to be so mild on the skin as to reduce any tendency to dermatitis.

Of pertinent interest in this connection is the fact that a rather well known mild alkaline powdered cleanser, containing anhydrous soap and borax, has been available on the American market for several years. If a hand cleaning powder containing these ingredients plus other useful components is desired, the following (11) should serve:

Powdered soap	1.0 lb.
Powdered borax	12.0 oz.
Sodium perborate	1.5 oz.
Fine corn meal	0.5 lb.

If preferred, the corn meal may be replaced by 4 ounces of fine powdered pumice. However, it is well to remember that the corn meal is an excellent cleaner that leaves the skin soft and smooth.

Liquid soaps, which find extensive use in industrial wash rooms, are generally made of coconut oil potash soaps, but sometimes the coconut oil is partly replaced by palm kernel oil or other vegetable oil. As a rule, glycerine, sugar or alcohol is included with the soap to lower the freezing point and to prevent cloudiness and foaming in the dispenser. As ordinarily employed, liquid soaps contain from 12 to 20 per cent of anhydrous soap, but more concentrated soaps (e.g. 40 to 50 per cent anhydrous soap, and pasty soaps, known as "liquid soap bases," are also available. These last are diluted with distilled water to give the required concentrations and sufficient alcohol or glycerine added. (4)

According to Schwarcz, (12) for the machine shop or factory worker, a concentration of at least 18 to 20 per cent of coconut oil soap should be employed. In some plants even this concentration will not suffice so that it is sometimes advisable to add a solvent, such as about 3 per cent of pine oil or a mild alkali such as up to 2 per cent of trisodium phosphate. Abrasives should not be included.

In view of a recent report (13) that there is growing preference toward the powdered type of hand cleaner, it is important that such products be given due consideration. Among the reasons for this growing demand might be cited easy dispensability, economy and effectiveness. Cleaners of this type are formulated according to the purpose for which they are intended; the components varying according to whether they are for hotel and bathroom use, office and general dispenser purposes, or for factory and garage use. Thus, a soap powder for industrial use may be made from: (6)

	Parts
Coconut oil soap, powdered	60
Colloidal bentonite (200 mesh)	33
Trisodium phosphate, powdered	7

This may be perfumed with 0.7 parts of a camphory sassafras oil or the like.

BECAUSE various greases and stains on the skin are more difficult to remove, it is sometimes necessary in certain industries to use cleaners containing solvents like carbon tetrachloride, naphtha, dioxane or other hydrocarbons. Powerful solvents, used in excessive amounts, may have deleterious effects on both the skin and, if absorbed, on the whole system. (14) However, as remarked by Davidsohn and Davidsohn, (15) solvents can be used in limited amounts if combined with an emulsifying agent like sulfonated oils which prevents the solvent from penetrating the skin. A paste of this sort, suggested by Schwartz (16) for the removal of indelible ink stains from the skin, consists of:

	Parts
Soap	30
Sulfonated castor oil	16
Synthetic detergent	20
Trisodium phosphate	4
Dioxane	20
Colloidal clay (bentonite or keiselguhr)	10

As is evident, this paste contains a fairly high proportion of solvent, hence its use should be followed by rubbing into the skin a mixture of lanolin and cold cream as an emollient.

Another solvent-containing hand cleaning paste, with obvious value for cleaning greases and other hard-to-remove stains, is given in a standard text (6) as containing:

	Parts
Soft soap	40
Water	20
Alcohol	20
Triethanolamine oleate	8
Decalin or heavy benzine	12
Sawdust— enough to make a paste	

Much simpler is a patented preparation (17) for removing ink, dye, carbon paper and similar stains from the skin. This consists of 1 part of a 20 per cent aqueous solution of titanium trichloride, 1 part of glycerine and 3 parts of alcohol. Unlike the solvents-containing preparations, this one depends largely on the reducing properties of the titanium salt.

WE now come to the second phase of hand cleaner development—one initiated by industrial physicians and public health workers and one which has had great influence on the manufacturers of such products.

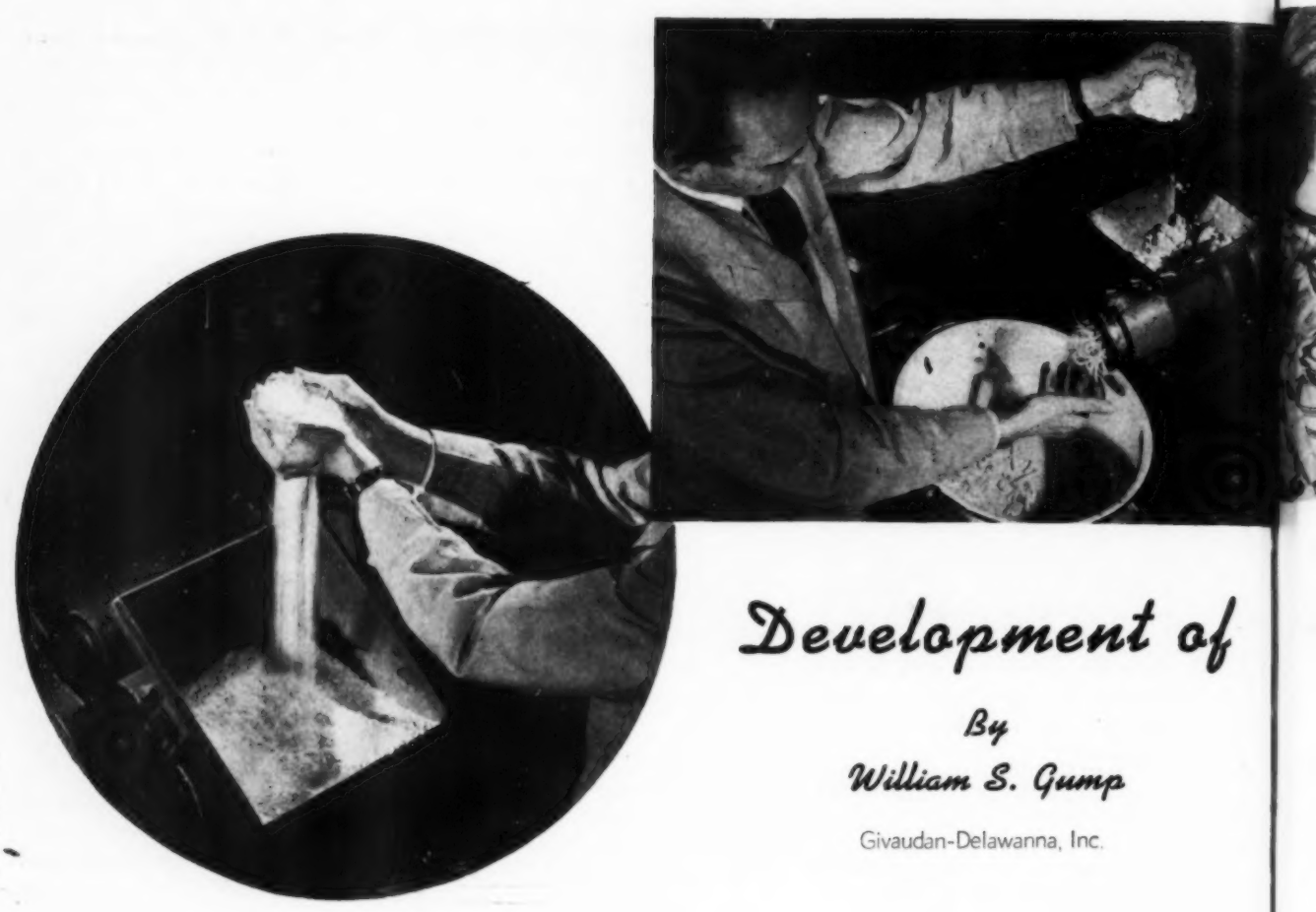
Some years ago, alarmed by the increasing occurrence of occupational skin diseases, and realizing the cost in both dollars and man-hours, dermatologists began to look into the causes of these dermatoses. Among other things, they found that harsh cleaners were often the actual causes of occupational skin diseases and that damage to the skin caused by such cleaners rendered the skin more vulnerable to the action of irritant chemicals. (18) Cleansing agents such as excessively alkaline soaps, fat solvents such as gasoline and turpentine and harsh abrasives, all used when workers wish to clean their hands quickly, have proven to be frequent causes of primary irritant dermatitis. (19)

Perhaps the most important finding of these several investigations, recently summarized in the report of the Committee on Occupational Dermatoses of the American Medical Association, (20) was the fact that "the best cleanser is a mild toilet soap and plenty of water."

Since a mild toilet soap may not be fully capable of removing more resistant types of grime or grease, Schwartz, (16, 21) of the U. S. Public Health Service, set up the requirements of a normal industrial cleanser, as follows: (a) It should be freely soluble in hard, soft, cold or hot water, (b) It should remove fats, oils and other soil without harming the skin, (c) It should not extract the natural oils and fats from the skin, (d) It should not contain harsh abrasives or irritant scrubbers which not only will injure the skin, but may also clog the plumbing, (e) It should be handy to use if in cake form, or flow easily through soap dispensers if in granulated or powder form, and, (f) It should not deteriorate or become insect infected.

To meet these standards, according to this authority, a normal industrial skin cleaner for general use should consist of a superfatted neutral toilet soap, plus a wetting agent or synthetic detergent (e.g. "Santomerse," "Nacconol," "Duponol,"

(*Turn to Page* 139)



Development of

By

William S. Gump

Givaudan-Delawanna, Inc.

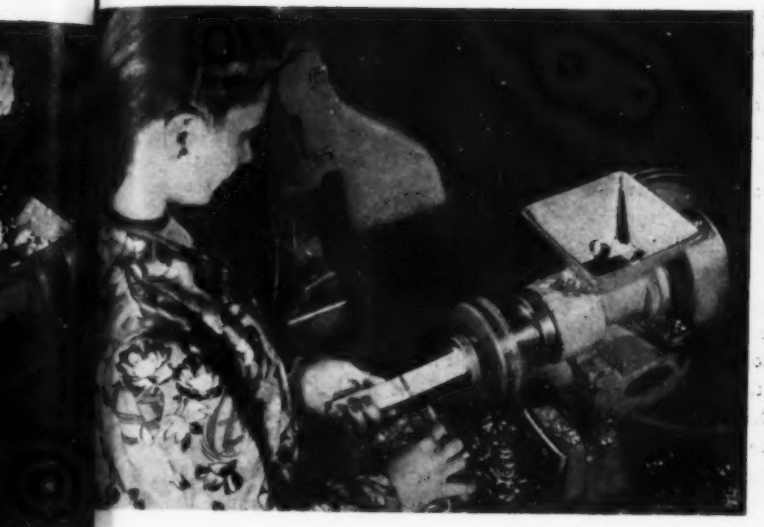
IT IS only natural that the problem of creating a germicidal or antiseptic soap should have attracted the attention of research workers for many decades. The history of such studies dates back to Robert Koch, eminent German bacteriologist, who in 1881 investigated the bactericidal activity of soap, and in the sixty-odd years following Koch's study, considerable work has been done and a comprehensive literature accumulated.

It is today generally understood that washing with a bar of an ordinary toilet soap mechanically removes the dirt, oil, grease and with it a great many germs from the surface of the skin, but leaves many other germs unharmed. The skin is of complex structure, and forms a mechanical barrier against the entrance of micro-organisms into the body. More than that, it is also able in some manner to destroy germs with which it comes in contact. This "self-disinfecting power of the skin," studied by Schiemann (1), by Arnold and his coworkers (2), by Burtenshaw (3) and by other investigators, augments very helpfully the cleansing by means of soap or other agents.

Bacteria and fungi of all kinds are taken up by the skin and especially by the hands. They are not capable of remaining there permanently. To use the terminology of Price (4), they are "transients," as distinguished from the "residents." The "residents" are the normal flora of the deeper layer of the skin, belonging mostly to the group of staphylococci, and are only slowly destroyed, probably because they are difficult to reach.

According to Arnold, dirty skin has very little destructive action on micro-organisms, and therefore, the importance of cleanliness and the liberal use of soap should be emphasized. Washing with soap removes the contamination of the surface of the skin, and the products of the normal or pathologically increased skin activity. The sweat and sebaceous glands leave certain substances on the skin; the uppermost layer of the skin, the horny layer, is in a continuous state of renovation.

The soap lather, as a cleanser, has two properties; it removes water insoluble liquids by emulsifying them, and solid particles of dirt and bacteria by forming a suspension. The mechanical action of rubbing or brushing also contributes to the removal of particles from the skin. But the very real problem of the destruction of the bacteria that are not removed, the transients and particularly the residents, remains; and its satisfactory solution no doubt constitutes one of the next great steps



Manufacture of cake soap on a small scale in the Givaudan laboratory was an important step in testing their new germicidal ingredient. Photos, l. to r. show (1) dispersion of the germicide in the soap by dropping onto rotating cylinders (2) soap extrudes from plodder in form of spaghetti and (3) a bar (4) small laboratory hand press stamps cakes.

a Germicidal Soap

forward in the development of the art of soap-making.

Those who wish to go into a detailed study of the work on the germicidal properties of soaps since Robert Koch, can refer to the comprehensive literature reviews by Klarmann (5) and Diasio (6). Summarizing the findings, we observe a definite susceptibility of certain micro-organisms to the action of soap, whereas others are highly resistant, Walker (7) believed that the thorough washing of the hands with soap sufficed for the destruction of pneumococci, streptococci, diphtheria and influenza bacilli, and a number of other germs. Neufeld et al. (8), who noted also the germicidal power of soap solutions against pneumococci *in vitro*, did not observe the same action on washing their fingers which had been artificially infected with these bacteria. Here, the soap apparently did not kill, but acted only as a cleansing agent. Coli and typhoid bacilli may be killed *in vitro* by soaps having a high content of cocoanut fatty acids. There is general agreement that soaps are not germicidal against staphylococci, no matter what kind of fats or oils are used in the manufacture of the soaps. Only rosin soaps show a pronounced activity against staphylococci, as reported by Cade and Halvorson (9a) Klarmann and Shternov (9b) and by Stuart and Pohle (10).

If we consider the fact that staphylococci, harmless and harmful ones, make up the main part of the resident flora of the human skin, and that ordinary toilet soaps are without effect against these bacteria, it is not surprising that many attempts have been made to incorporate various chemicals into soaps in order to render them germicidal against the inhabitants of the skin. As would be expected, both in the United States and in Europe, extravagant claims have been made for the hygienic value of so-called germicidal soaps; no doubt, practically all these soaps when tested either *in vitro* against Staphylococcus aureus or *in vivo* on the skin would have failed utterly to show any bactericidal properties. Norton (11) was quite sceptical about the value of the "healing," "antiseptic" and "germicidal" soaps which were on the market at the time of his investigation (1920), and he believed that the removal of bacteria from the hands could be done as effectively, if not more so, by ordinary soaps than by the special types then available. However, he considered it necessary to remove bacteria from the surface of the body, and particularly from the hands which act, more than any other parts of the skin, as vehicles in the transmission of infectious diseases.

Let us cite a few more references which indicate the importance of eliminating or at least reducing the bacteria of the skin, whether that be done by antiseptics in special cases or by the simpler method of the regular use of an effective germicidal soap. Price (3) stated that the resident flora of his hands included a large proportion (on one occasion nearly 50 per cent) of pathogenic organisms, chiefly *Staphylococcus aureus*, many of them hemolytic. Benney and Allen (12), investigating the bacterial flora of the normal skin of 38 surgical patients found *Staph. aureus hemolyticus* on 35 of them. These investigators reported:

> "The frequency on the skin of an organism so potent for mischief gives all surgeons cause to think furiously. Organisms entrenched in the skin are very stout enemies, and to knock them out a vigorous and above all, prolonged attack is required."

Other studies have demonstrated a small fraction of the presumed healthy population as carrier of potentially disease-causing staphylococci. Nimmo-Smith (13) found 5 per cent among Royal Army Medical Corps personnel and Gillespie et al. (14) 19 per cent

among the students whom they had examined.

A COMPLETE killing of the skin flora cannot be accomplished and probably would not be desirable. However, pathogenic contaminations should be removed from the skin as completely as possible. This is of great importance to surgeons, obstetricians and hospital personnel, to patients who may acquire a permanent pathogenic flora by discharge from wounds and abscesses, and to the health of the public at large. For instance, Martin (15) showed that the presence of a localized skin lesion produces a widespread increase in pathogenic staphylococci on the normal skin.

Thus, the value of a germicidal soap for regular application on the skin is strongly indicated; however, the preparation of a soap which kills the germs on the skin is not an easy task. A germicide which may be added to toilet soaps should fulfill the following conditions, in addition to retaining its germ-killing powers in soap:

1. It should not react with the soap constituents and with the moisture contained in the soap. It also should not be influenced by the free alkali of the soap nor by the alkalinity produced by the hydrolysis of the soap in water.
2. It should not be volatile and should not have a disagreeable odor.
3. It should be relatively non-toxic, should not be irritating to the skin or be a sensitizer.
4. It should not stain the skin or cause spots on the laundry.

It is quite evident that very few chemicals will meet these requirements. Mercuric iodide, in the form of its water-soluble double salt with potassium iodide, had been proposed by McClintock (16) as far back as 1897, and has found limited medicinal use since that time. A large number of organic mercurials have been suggested by Anderson (17) for incorporation into soap, but have not found practical application, probably on account of their toxic and irritating properties. Besides this disadvantage of mercury compounds, their highly bacteriostatic action must not be overlooked, and a differentiation between this and bactericidal activity should be made. Morton (18), in his recent report on so-called germicidal soaps to the Council on Pharmacy and Chemistry of the American Medical Association, stressed this point and showed that soaps containing mercurials are able to inhibit the growth of staphylococci in high dilutions, but do not kill them readily.

Another important group of disinfectants are the phenols. It is not surprising that phenols have frequently been suggested for the formulation of germicidal soaps. Disinfectants of the *Liquor cresolis saponatus* type of the U.S.P. are, of course, not germicidal soaps. They are composed of phenols and soap, but the ratio of soap to phenol runs generally from ½ to 1 on the one side to 3 to 1 on the other. Such soapy disinfectants are, no doubt, excellent for various uses, but could not be classified as germicidal soaps suitable for skin cleansing. For a soap to be germicidal, its active antiseptic ingredient should be present in a proportion of no more, and preferably less, than 5 per cent. Here, phenolic substances have proved a failure up to now because their bactericidal strength was lost in the presence of the large excess of soap. Hampil (19) concluded from the results of her studies of alkylphenols and alkylresorcinols that these substances, and phenols in general, are unsuitable for the production of germicidal soaps due to the marked inhibitory effect of the alkali metal salts of fatty acids. A probable explanation would be that the phenols form alkali salts or addition products with the soap and that such compounds possess little bactericidal activity.

IN OUR search for phenolic substances which would not be influenced by the alkali of the soap we found a number of diphenols which retained a large part of their bactericidal strength in the presence of excessive amounts of soap, and thus became practical for the formulation of germicidal soaps. These active phenols are derivatives of diphenyl, diphenylsulfide and diphenylmethane, such as 2,2′-dihydroxy-3,5-3′,5′ tetrachlorodiphenyl (20), 2,2′-dihydroxy-3,5,6-3′,5′,6′-hexachloro diphenylsulfide (21) and 2,2′-dihydroxy-3,5,6-3′,5′,6′-hexachloro diphenylmethane (22),* hereinafter termed "Compound G-11." When these substances are added to excess alkali, only one of the two hydroxy groups is neutralized, forming monoalkalimetal salts and leaving the remaining hydroxy group free. This may account, at least in part, for the bactericidal activity of these phenols in the presence of alkaline-reacting soap.

"Compound G-11" was studied in greater detail than any of the other phenols, and we will describe the results obtained with this substance. G-11 is prepared by condensation of two molecules of 2,4,5-trichlorophenol with one molecule of formaldehyde in presence of concentrated sulfuric acid:

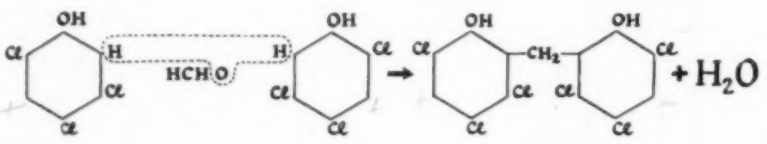
(*See formula below*)

G-11 is a white, crystalline substance, melting at 164-165° C. It is practically insoluble in water, but soluble in alcohol, acetone and dilute alkalis.

When tested in the form of its monosodium or potassium salt, this compound is strongly bacteriostatic and bactericidal against *Staphylococcus aureus* and other gram-positive bacteria, but is of considerably lower activity against gram-negative microorganisms, such as *E. typhosa* and E. coli. Its phenol coefficient against *Staphylococcus aureus* at 37°C., determined by the Food and Drug Administration method of Circular No. 198, is approximately 125.

* American authorities on organic chemical nomenclature prefer to call these compounds, respectively, bis-(2-hydroxy-3,5-dichlorophenyl), bis-(2-hydroxy-3,5,6-trichlorophenyl)-sulfide, and bis-(2-hydroxy-3,5,6-trichlorophenyl)-methane.

Formula of G-11



Before discussing the properties of this new chemical in soap, let us dispose of the matter of its toxicity. By all tests, G-11 has been shown to be a safe and harmless chemical. It was found to be relatively non-toxic when given orally, with a minimum lethal dose for guinea pigs of about 300 milligrams per kilogram of body weight. Translated into practical terms, and without considering the toxicity of the soap itself, an adult of average weight would have to do the impossible and swallow at least eight full cakes of germicidal soap containing 2 per cent of G-11, in order to reach a danger point. What is even more important for a product to be used regularly on the human skin is that it does not produce irritation or sensitivity, either when incorporated in an ointment or in soap. These facts have been established by a large number of patch tests carried out by Traub (23) and by Udinsky (24). Furthermore, a group of individuals have been using a soap containing 2 per cent of G-11 every day for over two years, without a single instance of irritation or dermatitis.

The soap used was prepared by incorporating 2 per cent of G-11 into an ordinary white soap stock; the soap was made up into 3¼ ozs. cakes. As control in all investigations, the same soap stock without G-11 was employed.

G-11, as such or in form of its monosodium salt, can be added during the manufacturing process of the soap in the form of powder or of a concentrated solution in alcohol or acetone. Acetone solutions of G-11 are recommended for incorporation into liquid soaps.

(To Be Concluded)

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Curd Soap Production

Synthetic fatty acids, which today do not have the objectionable odor previously possessed by such acids and which have a paler color, are good substitutes for coconut and palm oil fatty acids. The sodium soaps are solid but not hard and brittle. The synthetic fatty acids have a saponification number of 230-240, acid number of 225-235, iodine number of 12-13, and melting point of 30-34° C. Foaming is poor compared with soaps from fat. Soaps from synthetic fatty acids are rather unaffected by salt. Three times the amount of salt is necessary for salting out.

After saponification of the ordinary fat comes bleaching and salting out, then addition of synthetic fatty acids and a second salting out for purification of the soap and fatty acids. The soap and fatty acid mixture is then completely saponified. The product readily takes up fillers such as sodium silicate, provided the proper alkali concentration is used. Widaly. Seifensieder-Ztg, 70, 35-6; through Chem. Abs.

Coffee Grounds in Soap

A toilet or laundry soap giving an unusually heavy lather and of high detergent and skin-softening effect, is manufactured by grinding oil-bearing material from coffee such as waste coffee grounds, with a soap-forming fatty material such as cacao butter. The mixture is saponified, suitably with a 34 per cent caustic soda solution at about 120° F. R. Brown, to Brownmil Laboratories, Inc. U. S. Patent No. 2,354,686.

Unusual Fat Decomposition

An unusual type of fat decomposition recently occurred in an emulsion containing 20-30 per cent of edible oil. Gas pressure developed in the barrels, in some cases sufficient to blow out the bungs. No signs of rancidity development were apparent, either by taste or smell, and no peroxides had formed. The gas responsible for the pressure was found to be carbon dioxide, with some combustible gas also present, possibly hydrogen or methane. The free fatty acid content had increased from 0.1 to 7 per cent.

The conclusion was reached that the effects were brought about by certain microorganisms which produce the fat-splitting enzyme, lipase. The action of the enzyme would be to produce fatty acids and glycerine, the latter being oxidized to carbon dioxide. The fatty acids apparently broke down to carbon dioxide and methane. The wooden barrels had been well cleaned, but not to the extent needed to remove the source of the infection. *Chem. Trade J. & Chem. Engineer* 115, 526 (1944).

LIGNIN as a detergent ingredient

By J. J. Keilen

Industrial Chemical Sales Division
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NOW that lignin is available in fair sized experimental quantities (1), United States Patent 2,352,021, by Ernst Schubert and Heinz Pierer of Germany, vested in the Alien Property Custodian (2), becomes of interest to the soap maker. This patent describes the manufacture of detergents of improved properties containing 20 to 50 per cent of "alkali lignin."

According to the disclosures of this patent, the greatest advantages from the use of the lignin are obtained in detergents having only small amounts of fatty acids, such as those containing bleaching agents. The lignin can be added to any detergent however, with a resultant saving in the requirements of fatty acids. The present shortage of fatty acids of all types emphasizes the importance of any step toward their conservation.

When a detergent is formulated using inorganic chemicals as active ingredients, it is customary to include up to about 20 per cent or sometimes more, of fatty acids soap. This soap serves as a wetting and emulsifying agent, and protects the fabric or surface from the drastic action of the chemicals. If such detergents are used with hard water, lime soaps are formed to such an extent that the fatty acids are largely consumed, and the fabric therefore damaged or the surface stained.

The patent suggests the following as a possible formula for a washing agent using the lignin.

20 parts of an alkyl- or aryl-ester of sulfuric acid and higher molecular fatty acids
15 parts sodium carbonate
8 parts sodium perborate
24 parts alkali lignin
4 parts waterglass
14 parts sodium sulfate
15 parts water

Lignin can also be used advantageously with any soap to eliminate loss in efficiency in hard water. One example quoted in the patent consists of 25 per cent of an alkali lignin and 75 per cent of soap scrap.

The role of the lignin in the detergent is the prevention of the formation of the lime soaps when using hard water. This may be due to the protective colloid action of the lignin, as suggested in the patent, to the formation of calcium salts of the lignin itself, or to the adsorptive power of the lignin for the calcium. All three properties have been attributed to lignin.

The term "alkali lignin" as used in the patent is in conflict with the commonly accepted terminology in the United States. It is used to designate the water soluble reaction product of lignin and an alkali. Alkali lignin is generally used to designate a product resulting from an alkaline digestion of vegetable matter which may still contain the alkali, or which may have been converted to a completely organic material by treatment with acid. Such confused terminology has long been a problem to chemists and other technologists attempting to find commercial uses for this potentially abundant material.

The word lignin itself has been applied to a great variety of materials of vegetable origin, and unless further qualified, it is almost meaningless. It has been defined by the analytical chemist as anything of vegetable origin which is insoluble, under prescribed conditions, in 72 per cent sulfuric acid, but such a negative description is of little help when it is realized that the properties of the lignin depend on the method of preparation as well as the source.

Lignin occurs in nature in woody material where it appears to be associated with the incrusting substances in which cellulose fibers are imbedded. Any process involving the separation of cellulosic from non-cellulosic substances can be made a source of some form of lignin. Thus, lignin is contained in the waste liquors of the sulfite, soda, and sulfate processes for pulping wood, and in the solid residues of wood saccharification processes.

Schubert and Pierer, in patent 2,352,021, describe the preparation of what are more properly called alkali salts of lignin from the residues of wood saccharification. Although wood saccharification is practiced abroad it is doubtful if, in times of peace, it could be used economically in the United States (3). The use of these residues as a source of lignin is also complicated by their impurity, since they contain, in addition to some unreacted cellulose, a certain amount of sugars, pentosans, hemicelluloses, and other degradation products of the hydrolysis. Since some of these compounds do not dissolve in alkaline solu-

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tions, they must be separated by filtration.

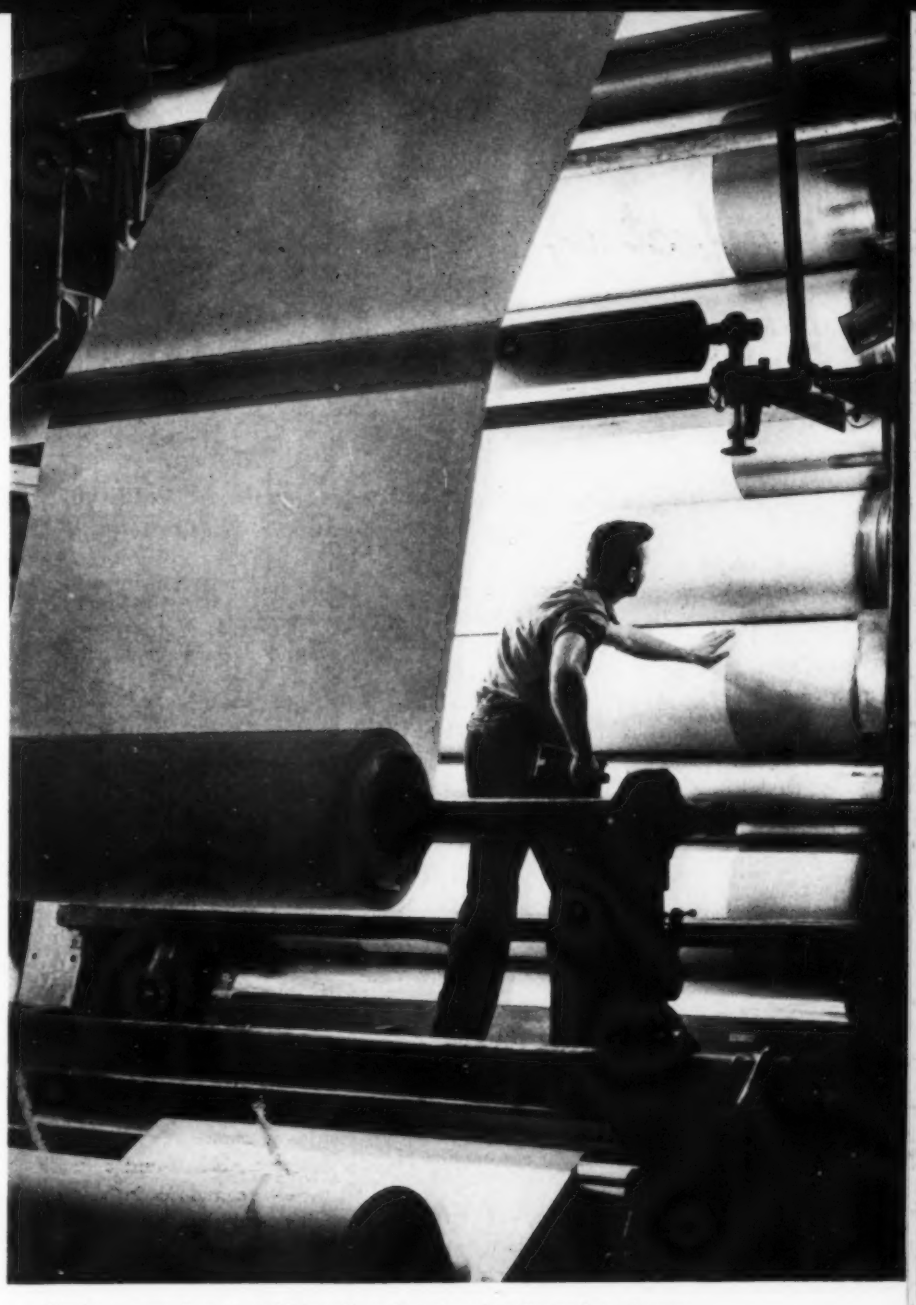
Sulfite waste liquor is a source of lignin which is fairly abundant in the United States. Any use for this material is welcomed because most of it is discarded into rivers and streams where it constitutes a problem in pollution. The lignin in sulfite waste liquor is in the form of ligninsulfonic acid, and has associated with it sulfites and sulfates as well as the usual degradation products of wood.

SULFITE waste liquor as a constituent of soaps has been studied, particularly in Europe. Several patents and some other literature are available on this subject (5, 6, 8, 9). Because of the presence of the sulfonic group on the lignin, it acts as an emulsifying agent.

The economics of manufacturing lignin from the ligninsulfonic acid of sulfite waste liquor are not very clear. The Howard process (4, 7) in which partially desulfonated ligninsulfonic acid is secured, seems to depend to a large extent for its feasibility on the production of another byproduct, vanillin.

In sharp contrast to the production of lignin from sulfite waste liquor, its manufacture from the waste liquors of the soda or sulfate processes for pulping wood offers, at least potentially, a large and ever-increasing supply of this material. These liquors are at present burned in order to recover the sodium compounds for reuse in pulping. The precipitation of the lignin by acid still permits the recovery of a large percentage of the sodium compounds, and interferes but slightly with normal mill operation. It is estimated that in 1943 there was potentially available over a million tons of lignin from the soda and sulfate pulping processes.

Moreover, the lignin from this source is readily purified, so that it may be made available virtually free of inorganic contamination, and with a minimum of organic impurities. Such lignins would require only the addition of caustic to be ready for use by the soap manufacturer.



Lignin, suggested as a useful ingredient for soaps, is a by-product of paper manufacture. Another paper by-product, tall oil, has over recent years become increasingly well known by soap makers as an important addition to the list of soap making materials.

While the chemical structure of lignin is still uncertain, much has been learned of its reactions, and several functional groups have been identified (10). It consists of about 65 per cent carbon, 5 per cent hydrogen, and 30 per cent oxygen. It is considered to be a polymer of many homogeneous units, having a unit weight of about 840 each. The unit contains four to six methoxyl groups, four or more hydroxyl groups, one of which is probably phenolic, and perhaps one carbonyl group.

Probably the presence of the hydroxyl groups on the lignin unit accounts for many of the reactions of lignin. In addition to the formation of salts with alkalies, lignin may be

(*Turn to Page* 146)

effect of sodium hydroxide on Dissolved Soap

By

Chester A. Snell*, Benjamin P. Caldwell, Foster Dee Snell*** and L. C. Cartwright*****

THE effect of solutions of alkaline salts as builders in soap solution has been more or less a matter of speculation. As a step in clarification, a study of the effect of sodium hydroxide has been conducted, since all aqueous solutions of salts of fatty acids are alkaline. In solutions of the order of 0.05-1.0 per cent this is approximately at the level of pH 10 or 0.0001 M with respect to the hydroxyl ion. The alkalinity is produced by hydrolysis of the salt which is in turn promoted by two factors. These are the relatively weak acidity of fatty acid as compared with the strong alkalinity of the base with which it is combined and the removal of fatty acid through formation of either acid soap or acid micelles. Only a trace of free fatty acid is present in a soap solution, not enough to saturate the water.[1]

McBain's picture of soap in solution as a colloidal electrolyte has been generally accepted. In a 0.1 per cent solution of soap, which is close to an average value for the laundry industry, hydrolysis has proceeded to the extent of at least 3 per cent as shown by the pH value[2]. The properties of the solution are attributed in part to hydrolysis, and in part to the presence of charged aggregates or micelles. The latter may involve a greater degree of hydrolysis than is indicated by the hydroxyl-ion concentration.

The solubility of soap decreases very rapidly with increase in the size of the fatty acid radical, and also varies with the degree of saturation of the fatty acid radical. Estimates from the simpler radicals must be considered as only qualitative but may offer some suggestions. Quick, working with potassium laurate concluded that there is no appreciable amount of undissociated soap contained in the charged micelles, and that, therefore, the micelle is an aggregate of hydrated simple fatty ions[2]. If it consisted solely of ions, this micelle would have the structure $(P_y,nH_2O)^{y-}$ in which P is a fatty ion and y is the number of simple radicals combined, and therefore the charge on the micelle. It is a fine shade of difference as to whether any neutral molecules are combined in the micelle to form $(Na_{y-n}P_y)^{n-},uH_2O$, which might also be written $[(NaP)_y,Pn]^{n-},uH_2O$. One of these more complex forms may logically be assumed with the understanding that the form may approach or reach the simpler form in which undissociated soap is absent. It is inevitable that water collects around these large electrical charges.

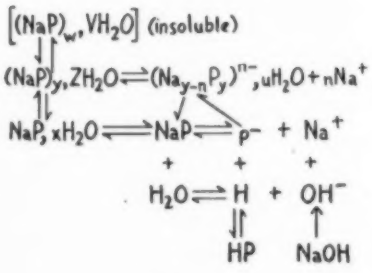


Figure 1
Suggested equilibrium in soap solution to which sodium hydroxide is added.

One of the authors has previously published[3] a suggested equilibrium in soap solutions to which sodium hydroxide is added and this is now modified somewhat to give the form shown in Figure 1. The effect of sodium hydroxide in driving the equilibrium upward is consistent with the form shown, opalescence probably appearing as $(NaP)_y,ZH_2O$ units increase in size, and ultimately precipitation occurring as such units reach such a size as to be greater than colloidal. Such removal of soap from the solution in insoluble form would be an explanation of an upper limit of the ratio of builder to soap which may be added with effectiveness.

It is demonstrable that the detergent action of soap is increased by an increase in colloidal soap up to an optimum, presumably because this form acts as a protective colloid toward suspended dirt particles. Assuming this to be the limiting factor, which is probable, the optimum amount of alkalinity is reached in the concentrations of builders used commercially.

Solutions

In previous work by some of these authors, the soap used was a 0.1 per cent sodium oleate solution. This concentration is representative of commercial practice. This type of soap is of lower titer than that most commonly used but the nature of the reaction is believed to be similar to that with stearates. For this work a similar solution was used but high purity was essential. It was prepared as follows:

The oleic acid used was Kahlbaum's "zur Analyse," which, when titrated in alcohol solution with a standard alcoholic NaOH solution, gave values calculated as oleic acid

(*Presented in part to the Faculty of the Polytechnic Institute of Brooklyn in partial fulfillment of the requirement for the degree of B.S. in Chemistry, 1935. Present address: Aluminum Research Laboratories, Aluminum Ore Company Division, E. St. Louis, Illinois.) **Polytechnic Institute of Brooklyn.) (***Foster D. Snell, Inc., Brooklyn, N. Y.)

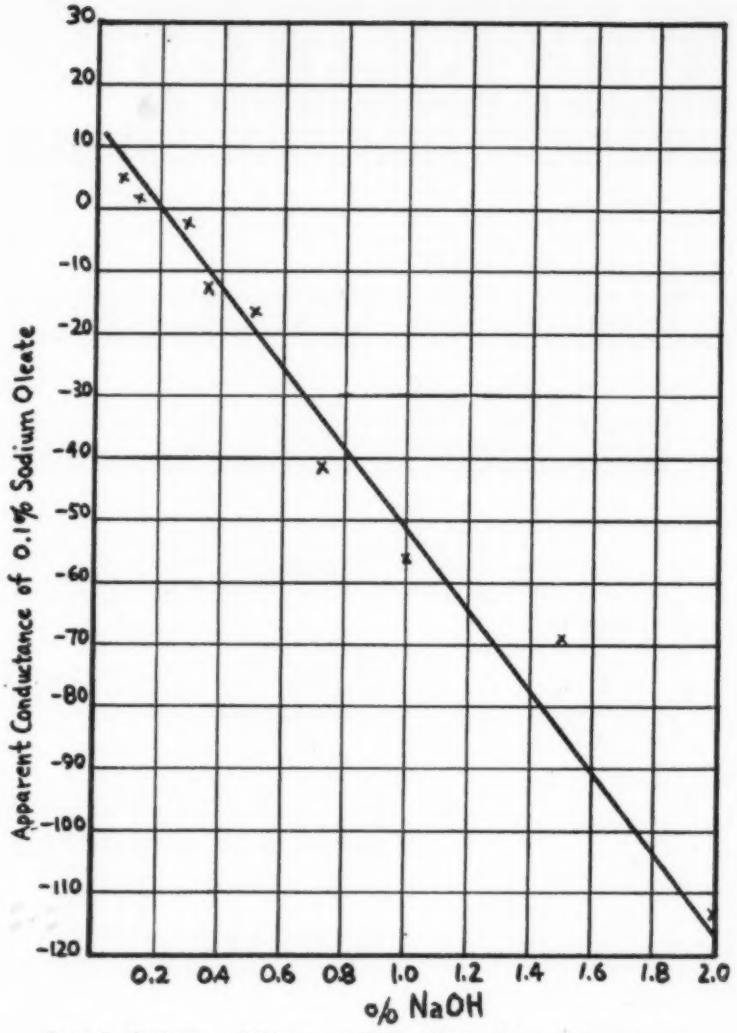


Figure 2. Conductance of 0.1 per cent Sodium Oleate solution vs. Concentration of Sodium Hydroxide Added.

ranging from 100.12 per cent to 100.15 per cent, a difference too slight to be considered in making the soap solutions. Solutions were prepared by combining equivalent amounts of acid and standard sodium hydroxide solution. The reproducibility is indicated by the conductances of two batches which varied by only $8X10^{-6}$ mho with a probable error of $5X10^{-6}$ mho.

Experimental Procedure

The apparatus used consisted of a Kohlrausch type of Wheatstone bridge, microphone hummer of 1000 cycle output, headphones, and dipping conductance cell. The cell just fitted a one-inch test tube so that by putting measured amounts of solution in the test tubes and inserting the cell any differences due to amount of solution or shape of container were eliminated. The solutions were kept at constant temperature in a water bath with a maximum deviation of $\pm 0.2°$ C.

Conductances were run on various concentrations of sodium hydroxide and the same concentration of sodium hydroxide plus 0.1 per cent soap solution. The differences between the conductance of the sodium hydroxide and the sodium hydroxide-soap mixtures were called the apparent conductance of the soap. When the mixtures are subjected to the same conditions of aging, comparable results are obtained. The values given in Table I are those obtained when the mixtures have been aged for three days at 40° C. with constant agitation.

The values listed in Table I are plotted in Figure 2. When conditions are controlled as to time, temperature, and agitation, there is a definite relationship between the concentration of added sodium hydroxide and the apparent conductivity of the soap. It was noted that the solutions of soap and sodium hydroxide became increasingly opaque as the concentration of sodium hydroxide was increased up to 0.375 per cent. Above that concentration flocculation occurred which increased with increase in the concentration of sodium hydroxide.

Discussion

The semi-quantitative expression of the effect of addition of sodium hydroxide shown in Table I (Pg. 78) and Fig. 2 is strictly in accordance with the postulations of Fig. 1. It is a reasonable assumption that sodium hydroxide derived from sodium carbonate, trisodium phosphate and alkaline sodium silicates will have similar effects. The pattern will be so further complicated however that preliminary data on the conductivities when these salts were added to soap solution showed no promise of interpretation without much more detailed data.

Assuming that soap is about half colloidal in 0.1 per cent solution[4], as sodium hydroxide is added to the soap solution the ionization is repressed according to the mechanism suggested in Figure 1. Beyond the very low concentration of sodium hydroxide necessary to repress the ionization there is probably a tendency for the colloidal soap formed to sorb sodium and/or hydroxyl ions. The rate at which the sodium hydroxide disappears from the solution corresponds fairly well to the Freundlich isotherm. That colloidal soap is formed is shown by opalescence followed by "salting out" as more sodium hydroxide is added.

Summary

When sodium hydroxide is added to 0.1 per cent sodium oleate solution the dissociation is repressed as shown by a decrease in the apparent conductance of the soap, and further micelle formation takes place. The solution becomes increasingly opaque

(*Turn to Page 78*)

RAW MATERIALS

FOR THE SOAP AND ALLIED INDUSTRIES

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COCOANUT OIL

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GLAUBER'S SALTS
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TRADE NEWS. . . .

Frank Huisking Honored

Lt. Frank R. Huisking, of the the U. S. Army Air Forces, and former secretary of Conti Products

FRANK R. HUISKING

Corp., Brooklyn, who was killed in action in Italy, Apr. 18, 1944, has been posthumously awarded the Army Flying Medal. His mother, Mrs. Charles L. Huisking, received the award at a ceremony at Mitchel Field, N. Y., Feb. 14. Lt. Huisking's father is the head of Charles L. Huisking & Co., New York, and his uncle, Joseph A. Huisking is vice-president of Fritzsche Bros., Inc. He was a 1937 graduate of the University of Notre Dame. The Huiskings have four other sons now serving in the armed forces.

Chi. P & G Workers Get Dividends

Chicago employees of Procter & Gamble Co. observed their annual "Dividend Day" celebration Feb. 10 with a party arranged by the management in the auditorium of Lane Technical High School. Checks for a total of $49,804 were presented to 398 persons under the company profit sharing plan, instituted by P. & G.'s founders more than half a century ago. L. E. Strub, Chicago plant superintendent, and H. S. Van Buren, divisional superintendent at Cincinnati, addressed the gathering, which included employees, their families and invited guests. An entertainment program followed.

New Detergent Firm Organized

Optimus Detergents Co., has recently been organized and is in operation at Matawan, N. J., for the manufacture of industrial detergents and development of new cleaning methods for industrial use. The company is closely associated with Optimus Equipment Co., manufacturers of specialized cleaning equipment, and both function in close affiliation with the Hanson-VanWinkle-Munning Co., of Matawan.

Plan Wider Market for "Solventol"

Solventol Chemical Products, Inc., Detroit, have announced plans for expanding distribution of their "Solventol" synthetic cleaner for household, industrial and institutional use. Markets which have heretofore been limited to a restricted area, will be established in thirty large cities adjacent to the Great Lakes, with outlets in grocery, drug and department stores. Prior to and during the spring housecleaning season newspapers, radio and other local advertising will be used until these areas are fully developed, and threafter a national advertising program will be launched, Campbell-Ewald Co., advertising agency, will direct the entire promotion.

Webb Detrex Ass't Sales Mgr.

W. H. Webb, former manager of the Indiana division of the firm, has just been appointed assistant sales manager of Detrex Corp., Detroit, industrial cleaners, where he will make his headquarters. He joined the firm in 1942 and handled the Michigan territory, exclusive of Detroit, prior to his going to Indianapolis.

Donald Price Joins Oakite

Dr. Donald Price, for the past year in charge of research in pharmaceuticals and fine chemicals for the

DR. DONALD PRICE

Research Laboratories of Interchemical Corp., New York, and before that for seven years director of organic research for National Oil Products Co., Harrison, N. J., was recently named technical director of Oakite Products, Inc., New York. He is an authority on wetting agents and sulfonated oils, and is known for his work in those fields, as well as in textile finishes and water repellents. Dr. Price, who received his three degrees: A.B., M.A. and Ph.D. from Columbia University, New York, is vice-president of the American Institute of Chemists. He is a councillor of the American Chemical Society, a member of the American Association of Textile Chemists and Colorists and vice-chairman of its Technical Program Committee, New York Chapter.

Johnson Columbia Sales Head

Walter J. Johnson is the new Chicago district sales manager for Columbia Chemicals, division of Pittsburgh Plate Glass Co., a position which he assumed Feb. 1.

Left and center, above, are two newly elected members of the board of directors of the Association of American Soap and Glycerine Producers, H. F. Bernhard of Pioneer Soap Co., San Francisco, and C. E. Bertolet of Laurel Soap Co., Philadelphia. On the right is E. A. Moss of Swift & Co., vice-president for the middle-west. All three men were elected at the recent annual meeting of the Association of American Soap & Glycerine Producers in New York, held in January.

Total JCQM Soap Purchases

In a review of its purchases for the year 1944, the Jersey City Quartermaster Depot, the largest in the Eastern area, reports that it spent $160,740,000 on soaps, insect repellents, detergents, chemicals and items of general supply, according to a release from the Depot issued Feb. 20. In addition, Jersey City bought $477,359,000 worth of drugs, toilet products, etc. for resale through post exchanges overseas, the release stated. The Jersey City Quartermaster Depot purchased 23% of the total Quartermaster Depot purchases for the year 1944, an amount put at $1,182,300,000.

Food Distributors Cancel Meeting

The National Food Distributors' Association, Chicago, has cancelled its directors' conference, scheduled to be held in Chicago during the early part of February, in cooperation with the request of the War Mobilization Director, it was announced Feb. 14. In addition, regular section group meetings have been eliminated.

C-P-P Engineer Dies

Frederick Braun, for the past four years an industrial engineer for Colgate-Palmolive-Peet Co., Jersey City, N. J., died Feb. 7, after a brief illness at his home in Jersey City. He was 37 years old. A graduate of New York University School of Engineering, he was a member of the Hudson County Society of Professional Engineers. Surviving Mr. Braun are a widow, Mrs. Alice Gorman Braun; his parents, Mr. and Mrs. Berthold Braun, and a brother, Emil Braun.

Two Warner Appointments

Two appointments have recently been announced by William R. Warner & Co., New York, and its affiliated companies, Richard Hudnut, Inc., and Standard Laboratories, Inc. John H. Holzbog, formerly director of industrial relations for Western Cartridge Co., East Alton, Ill., has been named vice-president and director of industrial relations, while L. M. Rodgers has been appointed superintendent of the pharmaceutical division of the company. He has been with the company for six years, and is in charge of manufacturing, filling and finishing, finishing materials, storage, and shipping departments.

Beach on Southern Trip

John H. Beach, vice-president of Seeley & Co., essential oils, New York, left recently for an eight week business trip through South America. He was accompanied by William H. Stickney, who will represent the firm in Brazil. Mr. Beach's itinerary calls for visits in Mexico, Guatemala and other countries in South and Central America.

Plan California Toiletries Show

A California Toiletries Show, at which soaps, cosmetics, etc., produced or sold in California, will be featured, will be held in Los Angeles as soon as war conditions permit, it was announced recently by the Los Angeles Chamber of Commerce. Chairman of the committee will be George H. Voelker, of Harriet Hubbard Ayer, Inc., New York, who will be assisted by committee members from such firms as: Bourjois Sales Corp. of California, Helena Rubinstein, Elizabeth Arden and Roger and Gallet.

CD&CA Hears Dr. Yap

Dr. Diosdado M. Yap, native Filipino and publisher of the newspaper "Bataan," was to speak on the subject of "American Philippine Relations" at the Feb. 23 luncheon of the Chicago Drug and Chemical Association, in the Gold Coast Room of the Drake Hotel. A proposal to raise the number of resident (Class A) active members from 300 to 350 was to be voted on at the meeting.

Drake Joins Home Products Sales

F. Stoddard Drake, formerly of the advertising and sales department of Procter & Gamble Co., Cincinnati, was recently named advertising and sales promotion manager of Home Products Sales Corp., New York.

Source of "Firsts"

Modern Research Laboratory at Niagara Plant as interpreted by the artist, John Gaydos

THE FACT that Niagara was the first to produce several important electro-chemical products in this country is due in great part to the efficiency of its research. Niagara's research activities are under the supervision of men of long and thorough experience in electro-chemical development, manufacture, and usage. This has enabled Niagara to give valuable cooperation to many industries using such products in the processing of war materials. It will prove of equal value in helping these industries convert efficiently to peacetime manufacture. Look to Niagara for experienced chemical service.

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Italian Soap Maker Reported Safe

SOAP has recently received word that Andrea de Pollitzer, who owned the largest soap factory in Trieste, Italy, before the war, is now in Rome where he is connected with the oil export agency of the Allied Commission. Mr. De Pollitzer escaped from Trieste in September, 1943, when the Nazis occupied the city, going to Rome with his mother, two children and his wife. He advises that no word has reached him as to the condition of his plant in Trieste, and he is as yet uninformed as to whether the plant has been bombed, whether it is being operated by the Germans, or in fact, what its fate has been. Mr. De Pollitzer indicates that copies of SOAP continued to reach him in Trieste until 1941, but that he was permitted to write no letters abroad after 1939.

Lever, Ltd. Elects Massey

Charles Albert Massey was elected president of Lever Brothers, Ltd., of Canada, it was announced late last month. Mr. Massey has held many positions with the company and has just returned from Australia where he has been since 1943. He is 45 years old. A native of Canada, Mr. Massey was educated at the University of Toronto. He practiced law for five years after graduation.

Carr's Estate $1,000,000

Robert F. Carr, late chairman of Dearborn Chemical Co., Chicago, manufacturers of water softening compounds and other chemicals, left an estate of $1,000,000, according to his will, filed at Waukegan, Ill., Feb. 8. Mr. Carr died in Chicago Jan. 22 at the age of 73. Heirs under the will are his three children, two daughters and his son, Robert F. Carr, Jr., head of Dearborn Chemicals.

Offer New Liquid Cleaner

Empire Chemical Products Co., Newark, N. J., is promoting a sales campaign in the institutional field for a new liquid cleaner for all types of floors. Made from vegetable oil with a high soap content, it is said to act as a filler on porous surfaces if not rinsed off after scrubbing.

Chicago Assn. Committee Heads

The Chicago Perfumery, Soap and Extract Association, at their Feb. 13 luncheon, had as guest speaker

F. A. Degener

Howard Vincent O'Brien, columnist of the *Chicago Daily News*. Committee appointments for the year were announced by F. A. Degener of Heyden Chemical Co., new president of the club. Chairman of the nine groups are as follows:

Membership—George Barr, G. Barr & Co.; Luncheon—A. Wm. Hempelmann, Monsanto Chemical Co.; Entertainment—Walter R. Nay, Mallinckrodt Chemical Works; Bowling—John A. A. Scott, Merck & Co.; Welfare—Norman A. Grimm, Chas. Pfizer & Co.; Legislative—Harry E. Dunning, Albert Verley & Co.; Finance—M. F. Charley, Standard Pharmacal Co.; Publicity—G. F. Claypool, House for Men, Inc.; Golf—E. F. Smith, American Products, Inc. and James T. Leavitt, Wm. J. Hough Co.

To Market "Alconox" Detergent

Standard Scientific Supply Corp., New York, has announced the availability of "Alconox" concentrated detergent, for use on industrial cleaning problems. Originally the product was promoted for use on hard-to-clean laboratory glassware and other scientific equipment. Action is described as physical, not chemical. It is now recommended for cleaning machine parts, chemical processing equipment, milk cans, etc. One spoonful is said to make a gallon of cleaning fluid.

Skotch Products Expands

Skotch Products Corp., Cleveland, has just announced that on and after Apr. 1, 1945 it will be located in new and enlarged quarters at 2710-12 Detroit Ave., Cleveland 13. The company, which makes a line of soaps, cleaners, disinfectants, etc., recently purchased a modern, four story, brick factory where it will operate its manufacturing and distribution facilities. The move is in line with an expansion plan based on current business demands. Skotch Products Corp. was formerly located at 1220 W. Sixth St.

Children Gather Soap for Poland

Chicago school children collected 254,790 bars of soap—thirty tons by weight—in a recent drive to gather supplies for the people of war-torn Poland. Polish War Relief, Inc., supervised the packing and the consignment was forwarded to New York for overseas shipment. Poland has been without soap for four years, the relief agency reported.

Offer New Laundry Detergent

Diamond Alkali Co., Pittsburgh, has announced a new laundry detergent for hospitals, hotels and institutions, which is recommended for heavy and medium soiled work in hard water. Composition, together with controlled alkalinity, make it an ideal detergent, it is claimed, for the varied water and soil conditions found in this type of laundry.

Hochstadter Laboratories Move

Hochstadter Laboratories have recently moved to new and larger quarters at 23 W. 47th Street, New York. According to Samuel Newmark, president, greatly increased facilities are available at the new location for testing and development work on soaps, detergents, waxes, polishes and other sanitary chemicals.

Named to Lever Adv. Posts

Frank R. Brodasky has been appointed advertising manager, and Geoffrey Cray, display manager of Pepsodent division of Lever Bros. Co., at Chicago.

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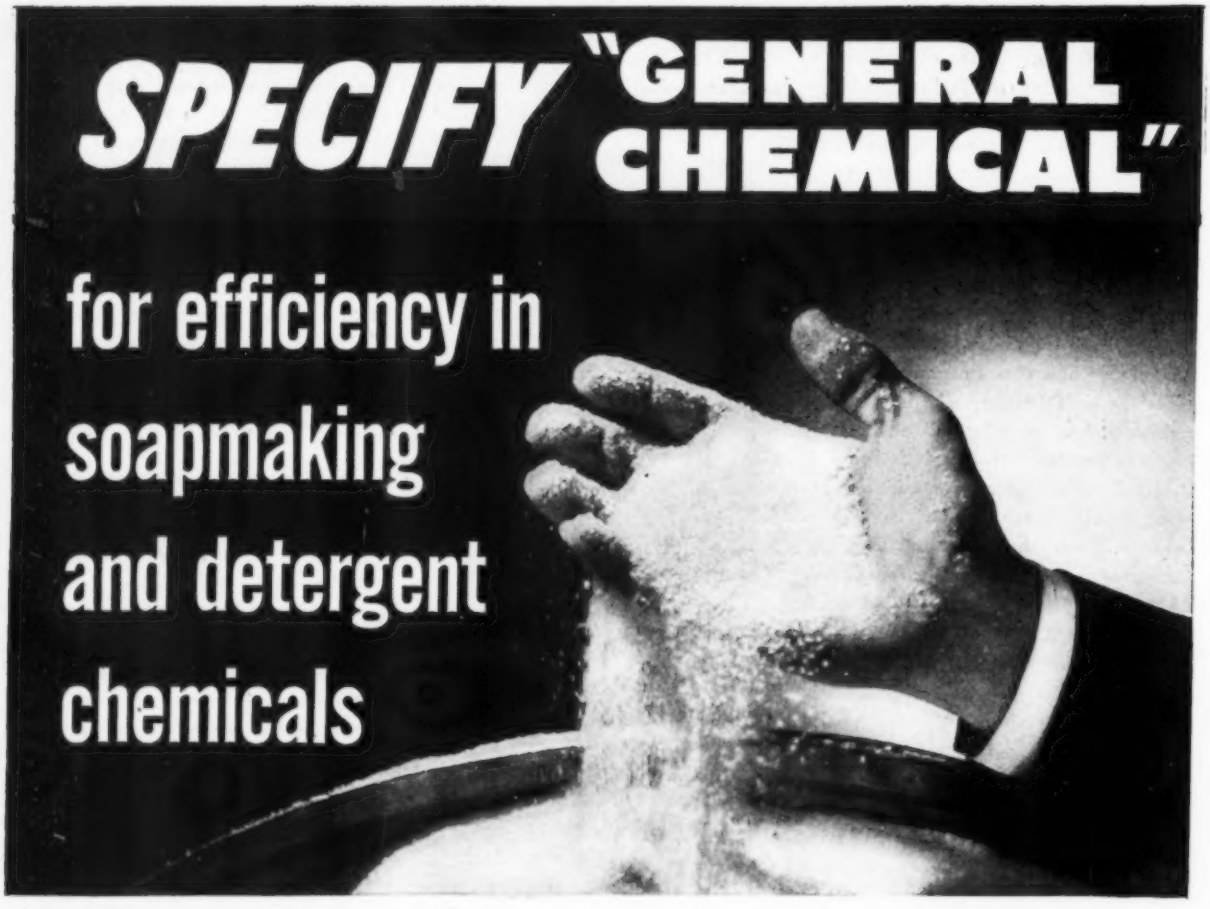

IMPROVED high quality soaps are required for efficient cleansing of new paints . . . new materials . . . new finishes. General Chemical products are valuable aids in the manufacture of such soaps and cleansers. These quality soapmaking and detergent chemicals are produced under exacting control conditions to achieve uniformity . . . quality . . . reliability.

★**Sodium Metasilicate** . . . A definite aid in wetting. It has a high pH, is a "buffered cleanser," suspends dirt, and softens water. Easier and safer to handle than caustic.

★**Trisodium Phosphate** . . . General Chemical Trisodium Phosphate emulsifies oils and greases, removes dirt quickly and thoroughly. It is a good water softener and soap builder, and is extremely economical. Available in four grade sizes—fine, standard, medium, coarse.

★**Tetrasodium Pyrophosphate** . . . helps build more abundant suds . . . washes clothes whiter . . . steps up cleansing action of soaps. Keeps iron salts in solution, prevents formation of "rings," helps eliminate scale formation in machine washers, and allows an increase in percentage of builders. TSPP, Anhydrous is for the soap manufacturer. TSPP, Diamond Grade is particularly suited for incorporation into detergent mixtures.

★**Sodium Bifluoride** . . . effective laundry sour. Neutralizes the last traces of soap; removes rust stains from textiles.

★**Sodium Silicate Solution** . . . Available in a number of grades and strengths ranging from 38° to 60° Baumé. Shipped in steel drums of 55 and 110 gallons, as well as in tank cars.

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In Wisconsin: General Chemical Wisconsin Corporation, Milwaukee, Wis.
In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver

Name Potash Soap Committees

HERBERT KRANICH of Kranich Soap Co., Brooklyn, chairman of the Potash Soap Division of the Association of American Soap & Glycerine Producers, has announced the following committee appointments for 1945.

Committee Appointments—1945 for the Potash Soap Division

Executive Committee

C. E. Bertolet—Laurel Soap Mfg. Co.
M. Fuld—Fuld Brothers.
T. M. Galvin—Armour & Co.
L. Hockwald—Hockwald Chemical Co.
Leo. G. Nunes—Conti Products.
M. P. O'Connell—Minnesota Chemical Co.
E. A. Olds, Jr.—Packers' Tar Soap Co.
L. J. Oppenheimer—West Disinfecting Co.
W. F. Pollnow—Vestal Chemical Co.
G. L. Simmonds—U. S. Sanitary Specialties Corp.
C. B. Solly—Harley Soap Co.
J. A. Walsh—Rochester Germicide Co.
L. Webb, Jr.—Hunnewell Soap Co.
C. L. Weirich—C. B. Dolge Co.
R. H. Young—Davies-Young Soap Co.

In addition to the above, the chairman of the division, Mr. Kranich, the vice-chairman, Clarence Weirich of C. B. Dolge Co., and the secretary, Andrew Federline, assistant manager of the Association of American Soap and Glycerine Producers, serve as ex-officio members of the executive committee.

Job Classification Committee

R. H. Young, Chairman—Davies-Young Soap Co.
H. F. Bertrand—Conti Products.
M. Fuld—Fuld Brothers.
Daniel McIver—Original Bradford Soap Works.
Wm. Merrins—Armour & Co.
L. B. Schwarcz—Ampion Chemical Corp.
C. E. Schaad—Chemical Manufacturing Co.
L. J. Oppenheimer—West Disinfecting Co.

Publicity Committee

M. Fuld, Chairman—Fuld Brothers.
D. J. Bachrach—Clifton Chemical Co.
J. L. Brenn—Huntington Laboratories.
C. E. Bertolet—Laurel Soap Mfg. Co.
C. L. Eichorn—Acme Soap Co.
C. E. Schaad—Chemical Manufacturing Co.
G. L. Simmonds—U. S. Sanitary Spec. Corp.
J. A. Walsh—Rochester Germicide Co.
Paul Warren—R. R. Street & Co.
C. L. Weirich—C. B. Dolge Co.
Zay Zucker—State Chemical Mfg. Co.
R. H. Young—Davies-Young Soap Co.

Census Committee

C. B. Solly, Chairman—Harley Soap Co.
C. E. Bertolet—Laurel Soap Mfg. Co.
M. Fuld—Fuld Brothers.
E. A. Olds, Jr.—Packer's Tar Soap Co.
C. L. Weirich—C. B. Dolge Co.
R. H. Young—Davies-Young Soap Co.

P&G Buys Spic & Span

Patents, trademarks and good will of Spic & Span Products, of Saginaw, Mich., manufacturers of a patented cleaner for painted walls and other surfaces, were purchased by Procter & Gamble Co., Cincinnati, it was announced by P&G early last month. Distribution of "Spic & Span" cleaner will be handled through the district sales offices of Procter & Gamble Distributing Co., the announcement states.

Cowles Employee Trust Plan

Establishment of a profit sharing trust for employees was announced Feb. 10, by Cowles Detergent Co., Cleveland. The plan provides that a predetermined return on the net worth of the company shall first be deducted from the yearly profit, computed before Federal income and excess profits taxes, and 20 per cent of the remainder shall be placed in trust for eligible employees. To become eligible for the plan an employee must complete two years of continuous employment unless granted a leave of absence. Employees in the armed forces are deemed to be on a leave of absence. The trust became effective for the year 1944.

Victor Plant Wins Fifth Award

The Mt. Pleasant (Tenn.) plant of Victor Chemical Works, Chicago, was recently notified of the winning of the Army-Navy Production Award for the fifth time for outstanding services in the production of war equipment.

PPG Co. Names Johnson

Walter T. Johnson, acting district sales manager of the Chicago sales office of Columbia Chemical division of Pittsburgh Plate Glass Co., has been named district sales manager of the division, in the Chicago territory, it was announced early last month. Mr. Johnson has been in the Chicago sales office since 1937, having joined the firm in 1930, following his training in chemical engineering at the University of Minnesota.

Amend Shipping Container Order

A further cut in permissible use of fibre shipping containers by manufacturers of soaps (except industrial), shaving cream and shaving soap is embodied in the newly amended version of L-317 just issued by the War Production Board. Soap and shaving cream manufacturers must reduce their use of containerboard in 1945, exclusive of quota-exempt deliveries, so as not to exceed one or the other of the following:

1. 95 per cent of the total square feet or 95 per cent of the total weight of containerboard content (whichever is smaller) of all new fibre shipping cases lawfully used to pack the class of product during the *corresponding calendar quarter in* 1944 exclusive of containers used for exempt deliveries;

or

2. 23¾ per cent of the total square feet or 23¾ per cent of the total weight of containerboard content (whichever is smaller) of all new fibre shipping containers lawfully used to pack the class of product during the *calendar year* 1944 exclusive of containers used for exempt deliveries.

The order classifies "soaps" (except industrial) and "Shaving creams and soaps" as different products, so that a manufacturer of both may choose one permitted type of quota for soaps and the other for shaving creams and soaps. However each manufacturer must determine now what type of quota he plans to work on, and this cannot later be changed. In the new order quota-exempt deliveries and small order exemptions are similar to those in the previous order, except that an amplification of the list of exemptions extends ex-quota status to deliveries to the Veterans Administration and to officers' messes ashore. The permitted maximum inventory is one and one-half carloads of all sizes and types of fibre shipping containers, or the maximum 30-day requirement for each size and type.

E-JECT-O, drain opener manufactured by the United Gilsonite Laboratories, Scranton, Pa., has a terrific attraction for moisture, yet economy demands it be packaged in unsoldered cans. So, it is packaged in Crown cans — because, after repeated tests, Crown lap-seamed cans outperformed the field . . . proved the perfect barrier against dampness. Thus, E-ject-o retains its potency, assures customer satisfaction. Making cans that mean satisfaction to you, to your customers and *their* customers is Crown's way of doing business.

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INDEPENDENT AND HELPFUL

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BIDS AND AWARDS

WFA Soap Awards

In recent openings for miscellaneous supplies by the War Food Administration, Washington, D. C., for soap, the following awards were announced: laundry soap, Procter & Gamble Distributing Co., Cincinnati, 600,000 pounds at 6.65c a pound; toilet soap, Procter & Gamble Distributing Co., Cincinnati, 137,520 pounds at 16.928c a pound; 167 cases, $6.38 a case; 591 cases, $5.89; 48 cases, $4.40; 280 cases, $8.87, and 932 cases, $8.87; Hershey Estates, Hershey, Pa., 70,000 pounds at 17c a pound.

Huggins Treas. Disinfectant Bid

James Huggins & Son, Malden, Mass., submitted the only bid on 500 gallons of disinfectant in a recent opening for miscellaneous supplies by the Treasury Department Procurement Division. The Huggins bid of 65c a gallon was subsequently accepted.

WFA Accepts Work Soap Bid

A bid of M. Work Co., Cincinnati, of 8.75c a pound on 540,000 pounds of laundry soap was accepted in a special purchase in a recent opening for miscellaneous supplies by the War Food Administration, Washington, D. C.

Dispenser, Soap Bids

The following bids were received in a recent opening for miscellaneous supplies by the Federal Works Administration, Washington, D. C.; 7,500 gallons of liquid toilet soap, U. S. Sanitary Specialties Corp., Chicago, 44c a gallon; Wm. Messer Corp., New York, 49.9c; Crystal Soap & Chemical Co., Philadelphia, 30.9c; R. M. Hollingshead Corp., Camden, N. J., 34c; Curley Co., Philadelphia, 30.9c; Trio Chemical Works, Brooklyn, 33.5c; Dixie Janitor Supply Co., Washington, D. C., 80c; Puritan Co., Rochester, N. Y., 32.9c; Penetone Co., Tenafly, N. J., 35c; and Brilco Labs., Brooklyn, 60c; on 1,000 soap dispensers, Charles G. Stott & Co., Washington, D. C., $1.60; Wm. Messer Corp., New York, $1.50 each and Crane Co., Long Island City, N. Y., $1.54.

Fuld Bros. Low Polish Bid

Fuld Bros., Baltimore, submitted the low bid of 8c on 4,000 pounds of paste metal polish in a recent opening for miscellaneous supplies by the Post Office Department, Washington, D. C. Other bidders included: Imperial Products Co., Philadelphia, 13.5c a pound; Wonder Chemical Co., Brooklyn, 9.5c; International Metal Polish Co., Indianapolis 8.5c; Unity Sanitary Supply Co., New York, 17c and Solarine Co., Baltimore, 19.5c.

Treasury Polish Awards

In a recent opening for miscellaneous supplies by the U. S. Treasury Department, Washington, D. C., Solarine Co., Baltimore, received the award on 4,008 quarts of liquid furniture polish with a bid of 16c a quart. In the same opening, Whittemore Bros. Corp., Albany, received the award on 2,500 containers of shoe polish in 2½ ounce containers with a bid of 5.55c a container.

P. O. Soap Awards to Peck

Peck's Products Co., St. Louis, submitted low bids on two items of paste soap in a recent opening for miscellaneous supplies by the Post Office Department, Washington, D. C. On item 1, 120 containers in 100-pound kegs, Peck's bid was 6.35c; on item 2, 120 containers in 450-pound barrels, Peck's bid was 5.85c. Among the other bidders in the opening were: Thompson-Hayward Chemical Co., Kansas City, Mo., item 1, 7.75c a pound, and item 2, 6.75c; Alco Oil & Chemical Corp., Philadelphia, item 1, 7.55c, item 2, 6.35c; Motor State Oil & Grease Co., Jackson, Mich., item 1, 6.62c, item 2, 6.2c; Harley Soap Co., Philadelphia, item 1, 6.8c, item 2, 6c; Davies-Young Soap Co., Dayton, item 1, 7.42c, item 2, 7.17c; Dermon Mfg. Co., Boston, item 1, 11.25c, item 2, 10.75c; Clifton Chemical Co., New York, item 1, 10c, item 2, 9c; Standard Soap Co. of Camden, Camden, N. J., item 1, 7.5c, item 2, 7.5c; Knoxall Corp., Indianapolis, item 1, 8.5c, item 2, 8c; Turco Products, Los Angeles, item 1, 7.95c, item 2, 7.85c; Fisher Industries, Cincinnati, item 1, 6.95c; item 2, 5.95c; Unity Sanitary Supply Co., New York, item 1, 12c, item 2, 11.5c and R. M. Hollingshead Corp., Camden, N. J., item 1, 8.9c, item 2, 7.9c.

Urinal Cake Award to Fuld

Fuld Bros., Baltimore, received the ward in a recent opening by the Philadelphia Navy Yard, Philadelphia, on 15,000 cakes of urinal deodorant with alternate bids of $945 and $972. Other bidders included: Beacon Brush & Supply Co., Philadelphia, 10c each; Clifton Chemical Co., New York, 7.5c; Creco Co., Long Island City, N. Y., 11c; Crystal Soap & Chemical Co., Philadelphia, 7.4c, and Engleman Chemical Co., Philadelphia, 7.82c.

Adams Named Gross V.P.

Eugene W. Adams, formerly a lieutenant (jg) in the U. S. Coast Guard, has resumed his civilian status and has returned recently to A. Gross & Co., manufacturers of stearic acid and red oil, Newark, N. J. He has been elected to the office of assistant vice-president, according to a company announcement, and for the time being will make his headquarters at the main office in Newark. Later he will resume his duties in the New York office, it was stated. In Sept. 1942, Mr. Adams enlisted in the Coast Guard and saw combat action as commanding officer of a sub-chaser.

Jensen Ziegler Chi. Rep.

Fred A. Jensen & Co., has just ben appointed Chicago representative for G. S. Ziegler & Co., producers of gilsonite, pitch, amorphous waxes and asphalt compounds, New York. Mr. Jensen will be assisted in the distribution of the company's line of products by R. T. McClelland, his associate.

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NEW TRADE MARKS

The following trade-marks were published in the February issues of the *Official Gazette* of the United States Patent Office in compliance with Section 6 of the Act of September 20, 1905, as amended March 2, 1907. Notice of opposition must be filed within thirty days of publication. As provided by Section 14, fee of ten dollars must accompany each notice of opposition.

Trade Mark Applications

JOLIVETE—This in upper case, bold letters for toilet soap. Filed Nov. 4, 1943 by Pinaud, Inc., New York. Claims use since Oct. 18, 1943.

GOLD VALUE—This in upper case, bold letters centered in a diamond outline for washing and scouring powder. Filed July 13, 1944 by Behrens Co., Anderson, Ind. Claims use since Mar. 1, 1930.

RETREAT—This in upper and lower case, open letters across two circles, one within the other, for preparation for removing cat and dog stains from rugs and furniture. Filed Oct. 18, 1944 by Bailey, Prihoda & Co., Kalamazoo, Mich. Claims use since Oct. 22, 1942.

"DOUBLE X"—This in upper case, extra bold letters for insecticide and fungicide in semi-paste form for use in the treatment of fruit trees. Filed Aug. 24, 1944 by National Products Corp., Orlando, Fla. Claims use since Feb. 3, 1936.

P-B—This in extra bold, upper case leters for insecticide deposit builders. Filed Sept. 30, 1944 by California Spray-Chemical Corp., Wilmington, Del. Claims use since July 25, 1944.

ROBOT—This in upper case, extra black bold letters with the fanciful drawing of a robot for insecticides and rodent exterminators. Filed Oct. 7, 1944 by Hyman Richard Rich, Milwaukee. Claims use since Aug. 22, 1944.

SOSPRAY—This in upper case, extra bold stencil letters for soyabean insecticide base. Filed Oct. 9, 1944 by Central Soya Co., Fort Wayne, Ind. Claims use since Sept. 15, 1944.

DRAT—This in upper and lower case, extra bold, script letter for insect repellent. Filed Oct. 12, 1944 by Block Drug Co., Jersey City, N. J. Claims use since Oct. 9, 1944.

DESIGN — This in upper case, bold letter for liquid bath foam. Filed Oct. 17, 1944 by Kinghill Laboratories, New York. Claims use since Oct. 3, 1944.

DUCKEY—This in upper case, extra bold letters for liquid air purifier and deodorant. Filed Oct. 17, 1944 by John C. Stalfort & Sons, Inc., Baltimore. Claims use since July 15, 1943.

SHOWEY—This in upper case, extra bold letters for liquid air purifier and deodorant. Filed Oct. 17, 1944 by John C. Stalfort & Sons, Inc., Baltimore. Claims use since July 15, 1943.

THAT—This in upper case, extra bold letters for liquid air purifier and deodorant. Filed Oct. 17, 1944 by John C. Stalfort & Sons, Inc., Baltimore. Claims use since July 15, 1943.

KLEEN-N-WAX—This in upper case letters on a shield outline within a reverse circle of solid black that has diagonal tabs extending from it for multi-purpose wax and cleaner. Filed Sept. 4, 1944 by Pur-O-Zone Chemical Co., Lawrence, Kansas. Claims use since Aug. 30, 1944.

IMPERIAL—This in upper case, extra bold letters for brush cleaner. Filed Sept. 15, 1944 by Wilson-Imperial Co., Newark, N. J. Claims use since May 26, 1932.

STIEFEL'S—This in upper case, extra bold letters for medicinal soaps. Filed Sept. 14, 1944 by Stiefel Medicinal Soap Co., Preston Hollow, N. Y. Claims use since 1847.

OXYSHAVE—This in upper case, bold letters for shaving sticks. Filed Oct. 21, 1944 by Lentheric, Inc., New York. Claims use since Oct. 6, 1944.

VITA-CHLOR — This in upper case, extra bold letters for a multipurpose cleaning and polishing preparation. Filed Oct. 7, 1944 by Vita-Var Corp., Newark, N. J. Claims use since Aug. 10, 1944.

MERCIREX—This in upper case, extra bold, black letters for medicated soap. Filed Nov. 15, 1944 by Mercirex Co., Milford, Md. Claims use since Oct. 6, 1944.

LUX PEARLS — This in upper case, roman face and italic, open and regular bold letters for soap in finely divided pearl-like form. Filed Nov. 23, 1944 by Levers Brothers Co., Cambridge, Mass. Claims use since Nov. 10, 1944.

LOUELLA'S DISINFECTANT — This in upper case letters beneath a drawing of Louella Whitt for disinfectant. Filed Sept. 23, 1944 by Louella Manufacturing Co., Los Angeles. Claims use since May 7, 1922.

SUTOL — This in upper case, extra bold letters for cleanser for general use. Filed Oct. 23, 1944 by Sutol Soap & Chemical Co., Philadelphia. Claims use since Sept. 20, 1944.

POLARINE—This in upper and lower case, extra bold letters for fur rug cleaner. Filed by Polarine, Inc., New York. Claims use since June 1, 1944.

ACTIVOL—This in upper case, extra bold letter for liquid soap. Filed Nov. 25, 1944 by Carbisulphoil Co., Dallas, Tex. Claims use since June 1, 1942.

STRACOTOIL — This in upper case, large and small, extra bold letters for toilet bowl, drain, etc. cleaner. Filed Nov. 27, 1944 by Sani-Toil Laboratories, Joplin, Mo. Claims use since Oct. 17, 1944.

SEPTOCHEM — This in upper case, extra bold, black letters for germicides, disinfectants, insecticides, deodorants, etc. Filed Sept. 30, 1942 by Synochem Corp., New York. Claims use since July 15, 1942.

PURATIZED—This in large and small capitals for bactericidal and fungicidal composition. Filed Jan. 27, 1944 by Gallowhur & Co., New York. Claims use since Dec. 27, 1943.

ROYAL OAK — This in upper and lower case, bold letters for shampoo in liquid form. Filed Mar. 1, 1944 by Lightfoot Schultz Co., New York. Claims use since Jan. 26, 1942.

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Use the distinctive properties of PQ Silicates for special qualities at a low cost. The detergent values of silicates —wetting, emulsifying, dissolving power, suspension and preventing redeposition of dirt—are widely known and recognized. Plus these features are other useful characteristics which may have slipped your mind.

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WORKS: Anderson, Ind. • Baltimore, Md. • Chester, Pa. • Gardenville, N. Y. • Jeffersonville, Ind. • Kansas City, Kans. • Rahway, N. J. • St. Louis, Mo. • Utica, Ill.

SAMAE—This in upper case reverse letters on a round background that is surrounded by a white circular band carrying the word "Products" and from which is hung a cross, for cleaning preparations. Filed Oct. 15, 1943 by Semae Products Co., Newafk, N. J. Claims use since January, 1942.

PPP—This in uper case, extra black, bold letters, one above the other and each apparently held up by the fanciful drawing of three male figures that are running, for fur cleaning chemicals. Filed July 1, 1944 by Paul Simon & Co., New York. Claims use since June 15, 1944.

VENUS — This in upper case, extra bold letters for silver polish. Filed July 20, 1944 by Walter G. Legge, New York. Claims use since Oct. 5, 1927.

BLACKOUT—This in upper case, extra bold, black letters for floor wax remover. Filed July 31, 1944 by Nu-Bail Manufacturing and Research Laboratories, Des Moines, Ia. Claims use since Sept. 1, 1943.

TOPSO — This in upper case, extra bold, black letters for household cleaner. Filed Nov. 8, 1944 by Gail Chemical Co., New York. Claims use since Oct. 31, 1943.

NAPSHEEN—This in upper and lower case, bold, script letters for liquid rug, carpet, upholstery and fabric cleaner. Filed Dec. 1, 1944 by Ralph G. Waner, Kansas City, Mo. Claims use since Sept. 6, 1944.

MEM—This in upepr case, extra bold, black letters for tooth paste and tooth powder. Filed Mar. 30, 1944 by Mem Co., New York. Claims use since Sept., 1926.

MONOXO—This in upper case, extra bold, black letters for insecticides and fungicides. Filed Aug. 21, 1944 by Stauffer Chemical Co., San Francisco. Claims use since Jan., 1941.

TOMAHAWK — This in upper case, extra bold, black letters for insecticides. Filed Sept. 16, 1944 by Kentucky Color & Chemical Co., Louisville. Claims use since Mar. 15, 1944.

T.I.D.—This in upper case, bold letters within a heavy vertical stripe rectangular border design with rounded corners for dentifrices. Filed Nov. 14, 1944 by Arthur Williams, Washington, D. C. Claims use since Jan. 15, 1944.

PLYOWAX—This in upper case, extra bold, black letters for floor wax. Filed Oct. 21, 1944 by Diversey Corp., Chicago. Claims use since July 11, 1944.

If your copy of SOAP is late

Due to production and transportation difficulties beyond our control it is quite possible that your copy of SOAP and SANITARY CHEMICALS may be reaching you later than normally. If so please bear with us during this emergency period.

410,318. Bait for exterminating rodents, etc. Filed by Rose Exterminating Co., Chicago, Apr. 26, 1944. Serial No. 469,692. Published Aug. 29, 1944. Class 6.

410,361. Detergents and cleansing compounds. Filed by S. W. Landsberger Chemical Works, Inc., New York, June 12, 1944. Serial No. 471,156. Published Sept. 5, 1944. Class 4.

410,368. Cleaning and polishing composition. Filed by La Salle Chemical Products Co., Detroit, June 24, 1944. Serial No. 471,604. Published Sept. 12, 1944. Class 4.

410,511. Tooth paste. Filed by S. S. White Dental Manufacturing Co., Philadelphia, June 16, 1944. Serial No. 471,324. Published Sept. 12, 1944. Class 6.

410,525. Liquid floor dressing. Filed by Hillyard Chemical Co., St. Joseph, Mo., July 10, 1944. Serial No. 472,058. Published Sept. 12, 1944. Class 16.

410,562. Shampoo for use on animals. Filed by Kent Laboratories, Highland Park, Ill., Oct. 4, 1943. Serial No. 463,872. Published Sept. 19, 1944. Class 6.

410,568. Shaving cream. Filed by Samuel Albert, New York, Dec. 20, 1943. Serial No. 468,885. Published June 13, 1944. Class 4.

410,588. Liquid soaps for wet and dry cleaning. Filed by Pennsylvania Salt Mfg. Co., Philadelphia, May 4, 1944. Serial No. 469,939. Published Sept. 26, 1944. Class 4.

410,602. Preparation to prevent the growth of fungi and bacteria in the treatment of oils, greases and waxes. Filed by Baltimore Engineering & Chemical Co., Baltimore, June 9, 1944. Serial No. 471,064. Published Sept. 19, 1944. Class 6.

410,608. Detergents. Filed by E. R. Squibb & Sons, New York, June 10, 1944. Serial No. 471,139. Published Sept. 26, 1944. Class 4.

410,624. Germicidal solution. Filed by Wm. S. Merrell Co., Cincinnati, June 23, 1944. Serial No. 471,567. Published Sept. 19, 1944. Class 6.

410,625. Preparation for the extermination of nits and lice. Filed by Los Angeles Pharmacal Co., Los Angeles, June 24, 1944. Serial No. 471,634. Published Sept. 19, 1944. Class 6.

410,626. Sudsing cleaner. Filed by Colgate-Palmolive-Peet Co., Jersey City, N. J., June 27, 1944. Serial No. 471,698. Published Sept. 26, 1944. Class 4.

410,630. Cleaner compounds. Filed by Myro Mfg. Co., Milwaukee, July 8, 1944. Serial No. 472,003. Published Sept. 26, 1944. Class 4.

410,672. Shampoo. Filed by Lusta Foam Co., South Boston, Feb. 19, 1944. Serial No. 467,568. Published Sept. 26, 1944. Class 6.

410,700. Shampoo. Filed by Swedish Shampoo Laboratories, Long Island City, N. Y., June 28, 1944. Serial No. 471,765. Published Sept. 26, 1944. Class 6.

410,703. Bacteriocidal and fungicidal compositions. Filed by Puratized, Inc., New York, July 1, 1944. Serial No. 471,879. Published Sept. 26, 1944. Class 6.

410,765. Automobile polish. Filed by F. Gordy Mfg. & Dist. Co., Salt Lake City, Utah, Mar. 7, 1944. Serial No. 468,023. Published Oct. 10, 1944. Class 16.

410,836. Insecticide and linoleates. Filed by Vita-Var Corp., Newark, N. J., July 10, 1944. Serial No. 472,091. Published Oct. 3, 1944. Class 6.

Perfume Specialties for

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LAUNDERING and scouring soaps — the soaps that are used to keep things spick and span in the home—present an odorizing problem far different from that of the finely scented toilet soap. Theirs is a special problem, influenced not only by the physical character of the finished soap, but by the character of materials used in its composition and by the costs and conditions it will have to meet ultimately in its particular market. By virtue of long, successful experience in this field, our laboratories are fully prepared to render competent, helpful assistance to manufacturers in the selection or creation of odor effects that will **add** to the salability of their products **without** disturbing their costs. May we suggest that you write, 'phone or call on us for preliminary consultation?

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FACTORIES AT CLIFTON, N. J. AND SEILLANS (VAR) FRANCE

Rug Cleaners Meet in N. Y.

The various phases of rug cleaning, both "on location" and in the plant were discussed at the local regional meeting of the National Institute of Rug Cleaners, held at the Hotel McAlpin, New York, Feb. 12 and 13. The meeting which had been planned originally as a national one, was changed at the last minute in order to comply with War Mobilization Director, James F. Byrnes' request that conventions of 50 or more be called off. Approximately 200 rug cleaners and about 20 representatives from allied trade fields attended the meeting. Charles H. Brown, Jr., of C. H. Brown Co., New York, was chairman of the meeting.

A discussion of "On Location Cleaning" was presented by Jerome Eisenberg, president of United Rug and Carpet Cleaners, Brooklyn, who described various phases of this kind of cleaning and the problems involved. He was followed by George Winkler, Jr., of John Winklers Sons, Far Rockaway, N. Y., who spoke on "Spotting and Cleaning Formulas."

The second day of the meeting was held at the cleaning plant of T. M. Stewart, Inc., New York, with a demonstration by Eugene F. Brehm, of Brehm's, Inc., Elizabeth, N. J., of a new type of spray hose equipment and rinsing technique whereby water pressure is automatically stepped up several times to assist in getting out more dirt, with a reduction in production time. He then demonstrated the twist weave soap and water washing. Powder rug cleaning was shown by Oliver Brantley, Careful Carpet Cleaners, Long Island City, N. Y. The meeting closed with a discussion of the various rug cleaning methods and an expression of the view that the most efficient method of twist weave cleaning was adequate soap and water washing and rinsing.

Shulton Appoints Springer

George W. Springer has been appointed a sales representative of the Los Angeles branch of Shulton, Inc., New York. He will cover the state of Colorado and parts of Nebraska, South Dakota and Wyoming.

T. G. C. Hendy Visits U. S.

Thomas G. C. Hendy, general manager of Evans Chemicals, Ltd., London, has completed a stay of a month in New York in connection with the post-war development of the European plants of Evans Chemetics, Inc. and their associated companies. During his visit in the United States, Mr. Hendy made preliminary arrangements for the manufacture of private-brand cosmetics in England for American companies after the war. While in America, he made his headquarters with Evans Chemetics, Inc. in New York.

T. G. C. HENDY

Kelly Joins Ann Haviland

Arthur A. Kelly, formerly in charge of sales promotion for Houbigant, Inc., New York, has just joined Ann Haviland Laboratories, perfumes and bath preparations, as assistant to the president.

Devine, Standard Alcohol, Returns

Standard Alcohol Co., New York, has announced the return of Lt. Col. John E. Devine of the Chemical Warfare Service to assume the position of sales manager for the midwestern territory succeeding Joseph W. Harrington who has been transferred to the company's main office in New York. Col. Devine, a reserve officer of CWS, was ordered to active duty in May, 1941, and has served since that time. He will make his headquarters at the midwest division office at 75 East Wacker Drive, Chicago.

Inedible Fat IAC Meets

Members of the newly formed Inedible Fat Producers Industry Advisory Committee, were scheduled to meet in Washington with officials of the Office of Price Administration, Feb. 28. The group planned to discuss existing OPA regulations covering tallow and grease. Members of the committee are: James H. C. Allen, Western California Products Co., San Francisco; John H. Bender, Rath Packing Co., Waterloo, Ia.; Sam Benedict, Proctor & Gamble Co., Cincinnati; Abraham S. Berg, Neatsfoot Oil Refineries Corp., Philadelphia; K. K. Boyd, Emery Industries, Inc., Cincinnati; V. J. Bullen, Tallow and Grease Division, Swift & Co., Chicago; W. C. Butler, Darling & Co., Chicago; William Eisenstadt, Chicago; C. D. Fitch, Wilson & Co., Chicago; Roy Hartman, Globe Rendering Co., Chicago; Arthur M. Hayes, Van Iderstein Co., Long Island City, N. Y.; Roger E. Morse, Jas. F. Morse & Co., Boston; Don M. Pfeiffer, Akron Soap Co., Akron, O.; and L. J. Phillips, Armour & Co., Chicago.

WFA Names Successor to Marshall

Lee Marshall, director of the Office of Marketing Services and vice-president and director of supply of the Commodity Credit Corporation of the War Food Administration, resigned Jan. 31, to return to private business. C. W. Kitchen of the U. S. Department of Agriculture has been named to succeed Mr. Marshall as director of the Office of Marketing Services, and Lt. Col. Ralph W. Olmstead has been named to take over as vice-president and director of supply of the CCC. Col. Olmstead has, among other responsibilities, the purchasing, storing and shipping of foods, including fats and oils and soaps, to meet the various supply programs of the WFA.

Louis Werk Dies at 71

Louis Werk, secretary and treasurer of M. Werk Co., manufacturers of soaps, stearic acid and glycerin, Cincinnati, died Feb. 18. He was 71 years old. Mr. Werk had been associated with the company for many years and was a grandson of the founder, Michael Werk. He is survived by his widow, Mrs. Margaret Golden Werk.

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RAW MATERIAL MARKETS

As of Feb. 23, 1945

REPORTS emanating from Chicago during the first three weeks of the month of February continued to emphasize the growing shortage of lard and rendered pork fat, as well as reductions in the output of other meats, with their consequent effect on the fats and oils situation. Predicting a 15 per cent reduction in meat output and a 30 per cent reduction in the number of hogs processed in the fiscal year ending next October, George A. Eastwood, president of Armour & Co., Chicago, told a recent stockholders' meeting that there would also be a drop in lamb supplies, but that beef and veal supplies would increase by five and one per cent respectively.

Lard Shortage Background

With stocks of lard in cold storage on Feb. 15, reported at 7,225,000 pounds, as compared with 50,288,000 a year ago, Mr. Eastwood told the story of why so many fewer hogs are being shipped to market and thereby causing the shortage of lard. Toward the middle of last year, he pointed out, government livestock authorities were disturbed at the 1945 feed supplies, and "possibly because of the belief that the European phase of the war might end in the fall, a campaign was launched to guard against overproduction of livestock." Chief reduction efforts were aimed at hogs, then in record supply, with large storage and fear of a shortage of manpower to slaughter hogs considered problems at the time. Farmers were asked to cut the supply by 17 per cent. Unfortunately, the cut amounted to more than the expected 17 per cent and will run closer to 30 per cent, according to Mr. Eastwood. As a result, stocks of lard in all positions in the country are currently only 82,000,000 lbs., as against 248,000,000 pounds a year ago and a five year average of 216,000,000. Trading in lard and rendered pork fat is at a standstill, newspaper headlines say, and eastern packers are reported ready to curtail or suspend operations unless more hogs are shipped to market. The hogs that are coming into market are running on the average 22 to 25 pounds lighter than those of a year ago, which, of course, results in a still greater reduction in output per hog. There is little or no open market trading at this writing in lard, rendered pork fat or provisions, the bulk of the business being done directly by packers.

Meanwhile, from Chicago, comes word that for the week ending Feb. 16, largest cattle receipts in 25

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SOAP DISPENSER

Amber-transparent . . . strong, long-wearing, light in weight ● Stream-line styling for modern eye appeal ● Positive agitator prevents packing . . . insures smooth, even flow ● Non-clog, thrust-in discharge valve easily taken apart for cleaning ● Heavy brackets for direct mounting to wall or pipe ● Wide-opening top for easy filling ● Use your own nameplate ● Capacity: one quart ● Overall size: 8" high x 3¼" x 3½" ● Fully guaranteed.

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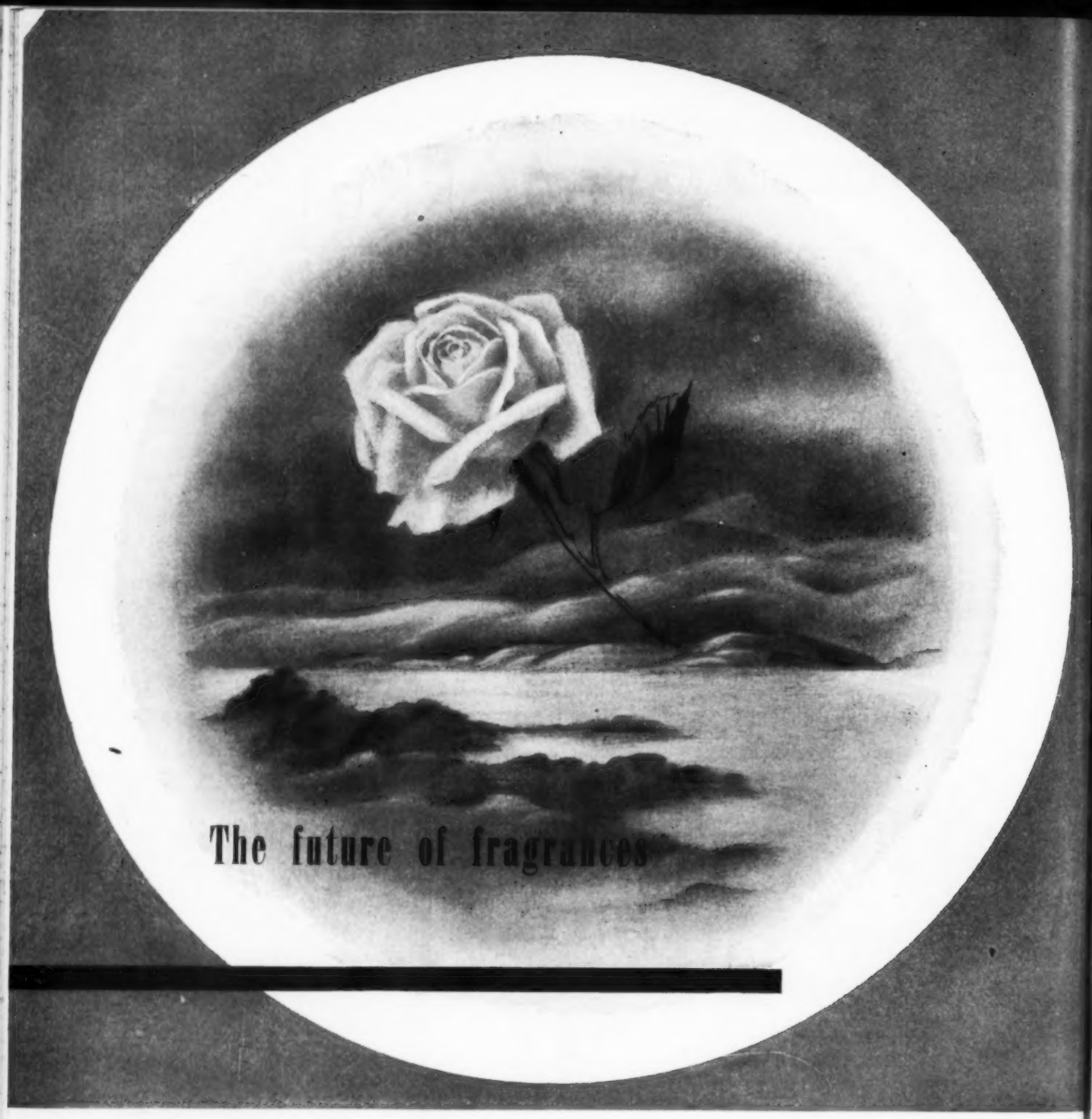

The artist in perfumes envisions a new world of fragrances still unknown today . . . fragrances which his creative skill will translate into reality in days to come. And Dow is helping him to make these plans come true . . . by placing at his disposal an ever-widening selection of fine chemicals and *Synthetic* Aromatics.

The quality and uniformity of Dow *Synthetic* Aromatics available today reflect a long record of experience in precise chemical manufacture. True to its tradition of progress, Dow is applying its research facilities to the perfection of still newer aromatics to enrich the possibilities of tomorrow's creative perfumery.

DOW AROMATIC PRODUCTS: Coumarin, Cyclotene, Diphenyl Oxide, Diphenyl Methane, Gardanthrol, Indol, Methyl Anthranilate, Methyl Phenyl Carbinyl Acetate, Methyl *Salicylate*, Palatone, Phenyl Ethyl Acetate, Phenyl Ethyl Alcohol, *Styrene* P-100, *Sylvenol*, and others—

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CHEMICALS INDISPENSABLE TO INDUSTRY AND VICTORY

years were recorded. At the same time, the military demands for soap, partly for relief distribution in Europe have expanded.

With talk of shortages of fats and oils in the United States prevalent, the liberation of the Philippines, one of the world's major surplus-oil and fat producing areas, proceeded quickly. The 700 to 900 million pounds of tropical fats exported by the Philippines, annually, before the war, and 99 per cent of which was cocoanut, would be a big help in alleviating fats conditions here in the United States. From the looks of things, however, export of copra or coconut oil in large volume from the Philippines will not be resumed for at least a year, it is thought.

The current cut in soap fats and oils quotas reflects a decline in fats and oils supply this year of about 1,200,000,000 pounds from last year, it is asserted. Last year at this time supplies were up 600,000,000 pounds over 1943. While stocks have declined needs of the armed services and the U.N.R.R.A. for soaps as well as edible fats have mounted sharply.

New Inventory Controls

An announcement dealing with restrictions of inventories of tallow and grease is expected to be made shortly by the War Food Administration. Inventory controls previously in effect were removed last year, but in view of the current tight situation on fats and oils it has now become necessary to reinstate restrictions on tallow and grease inventories.

Sharp Cut in Rosin Use

The War Production Board issued a new restrictive order on rosin consumption, M-387, on February 28. The order restricts use of gum or wood rosin in soap manufacture for civilian consumption to 25 per cent of the amount used in the corresponding calendar quarter of 1944 to fill civilian orders only. Carryover of unused quoca into the succeeding quarter only is permitted. Unrestricted use of rosin is permitted in the manufacture of soap for delivery to government agencies, Army, Navy, etc. Inventory controls prevent acceptance of rosin deliveries which would bring inventory above a three-months aggregate.

Talc Price Ceiling Set

A maximum price ceiling of $17.50 a ton, f.o.b., Zurich, Calif., was established by the Office of Price Administration, Feb. 17, for a select grade of crude talc produced in Esmeralda County, Nev.

On the essential oil front, some concern is felt for future imports of Madagascar ylang ylang, geranium and vetivert because of a recently reported ruling that all vanilla beans in Madagascar have been frozen pending a ruling on future exports by the Colonial Ministry of the Republic of France in Paris. Some new lots of Bourbon geranium arrived here recently and are being offered in not too large quantities at $12.50 a pound.

Restrict Linseed Oil Inventory

The new draft of WFO-124 restricts soap makers' inventories of linseed oil. No user may now accept a delivery of linsed oil that will cause his inventory of that oil to exceed one-third of the amount used during the preceding calendar quarter.

RAW MATERIALS FOR THE SOAP INDUSTRY

COCOANUT OIL

VEGETABLE OIL FATTY ACIDS ANIMAL AND FISH OIL FATTY ACIDS

THE LAMEPONS—Unique surface active agents for cosmetic and industrial use

QUADRAFOS—A stable polyphosphate for water conditioning and effective detergency

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Soda Ash
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Caustic Potash
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After gruelling tests in actual operation, the use of Nuchar now represents standard practice in a number of industries, such as: Chemicals, Drugs and Pharmaceuticals, Food Products, Industrial Water, Off-Grade Products, Oils, Fats, Waxes, Greases, Trade Wastes and Water Purification.

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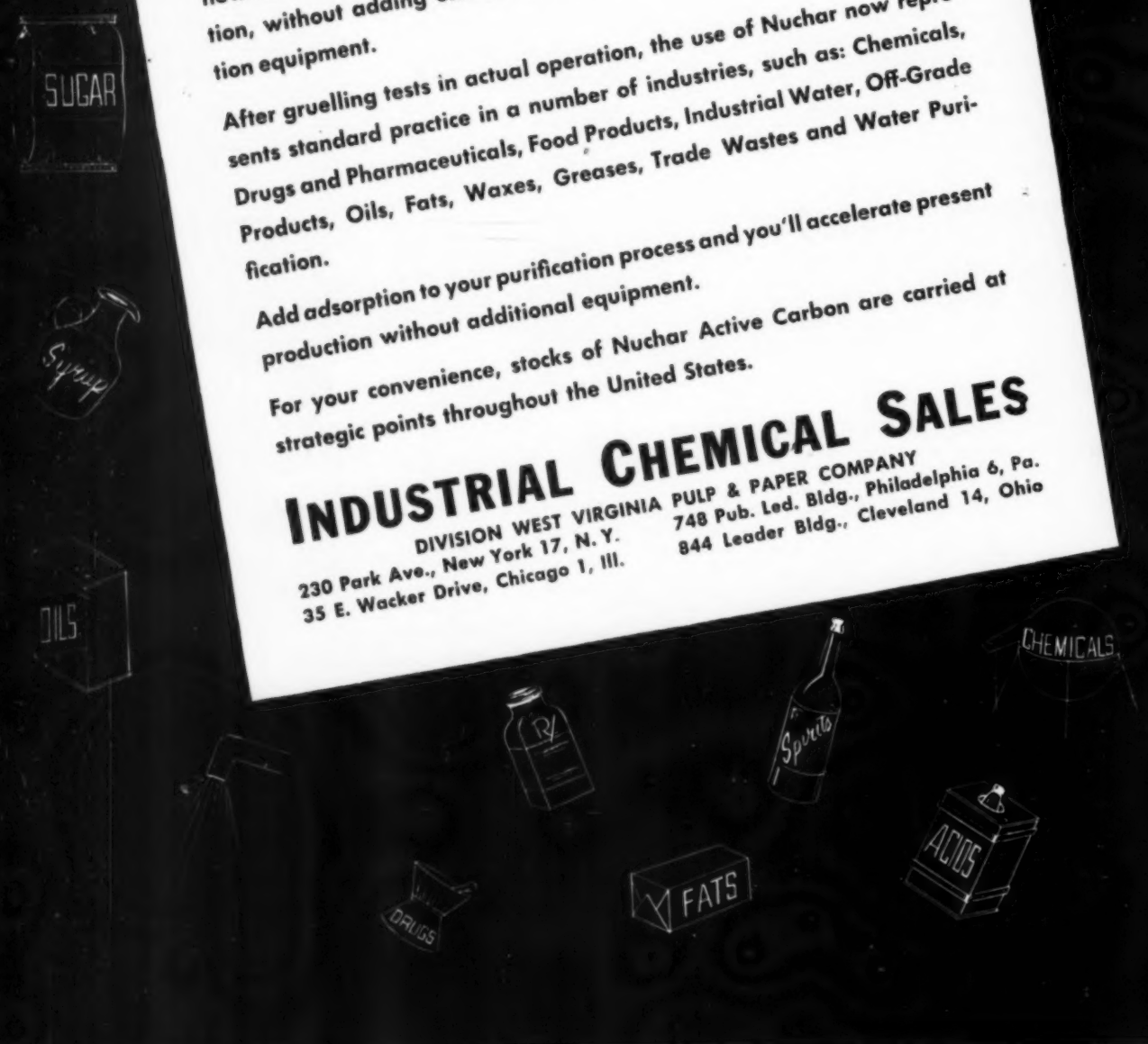


SOLUBLE OILS

SOLUBLE oils are homogeneous preparations containing mineral oil, pine oil or other hydrocarbons, an emulsifying agent and a small amount of water. The appearance is of pure mineral oil, but the oil will disperse on contact with water to form a stable milky emulsion. Soluble oils are useful in compounding dry-cleaning soaps, water-soluble wax emulsions, and hand soaps.

As emulsifying agent, unsaturated fatty-acid soaps with a chain length of C_{18} or more are very suitable. A material soluble in fatty acids and in soap solution is advisable, such as ethanolamines, carbitols, cellosolves, glycols and other alcohols. Sulfonated mineral oils, known as mahogany soaps, have been used extensively in soluble oils.

Sulfonated Oil Substitute

A recent shortage of sulfonated oils has led to the development of a substitute with similar properties. This is made by sulfonating lard oil, low-titre tallow, or tall-oil fatty acids for about an hour during the process of compounding the soluble oil. The amounts of sulfuric acid and tallow are calculated so that only the unsaturated groups in the olein are sulfonated. The process is as follows:

The lard oil or tallow is sulfonated in a jacketed kettle by adding with stirring the calculated amount of 66°Be. sulfuric acid in fractions. The reaction between sulfuric acid and olein is so highly exothermic that adding the whole amount at once would overheat the mixture and some decomposition would result. By adding a quarter of the sulfuric acid with stirring, the temperature of the mixture rises until the sulfuric acid is taken up completely. After the temperature drops, a second addition of sulfuric acid is made. This is continued until sulfonation is complete. The product is diluted with the calculated amount of alcohol or glycol, and the fatty acid. A 45 per cent solution of caustic potash is added slowly with stirring. The final product is the base of the soluble oil.

The base oil has to be adjusted so that it forms a clear transparent oil on dilution to about 80 per cent mineral oil content. If cloudy, a small amount of oleic acid or caustic potash must be added. If neither removes the cloudiness, a small amount of alcohol or glycol is added.

After the sample is clear, 10 cc. are dissolved in 250 cc. of water and the stability observed a half hour later. No oil film should separate, nor later after several days.

In the table above, examples of compositions are given. The products are low priced. Substituting a third of the tall oil with oleic acid assures better performance in hard water.

Hand Soaps

Soluble oils are very effective when used as mechanics' hand soaps to take off oil and grease. The dry hands are rubbed with the undiluted oils and rinsed off with water. Formulas are illustrated in the table below.

By substituting part of the rosin or tall oil with oleic acid, the stability of the emulsion in hard water will be increased.

Liquid Soap Stock

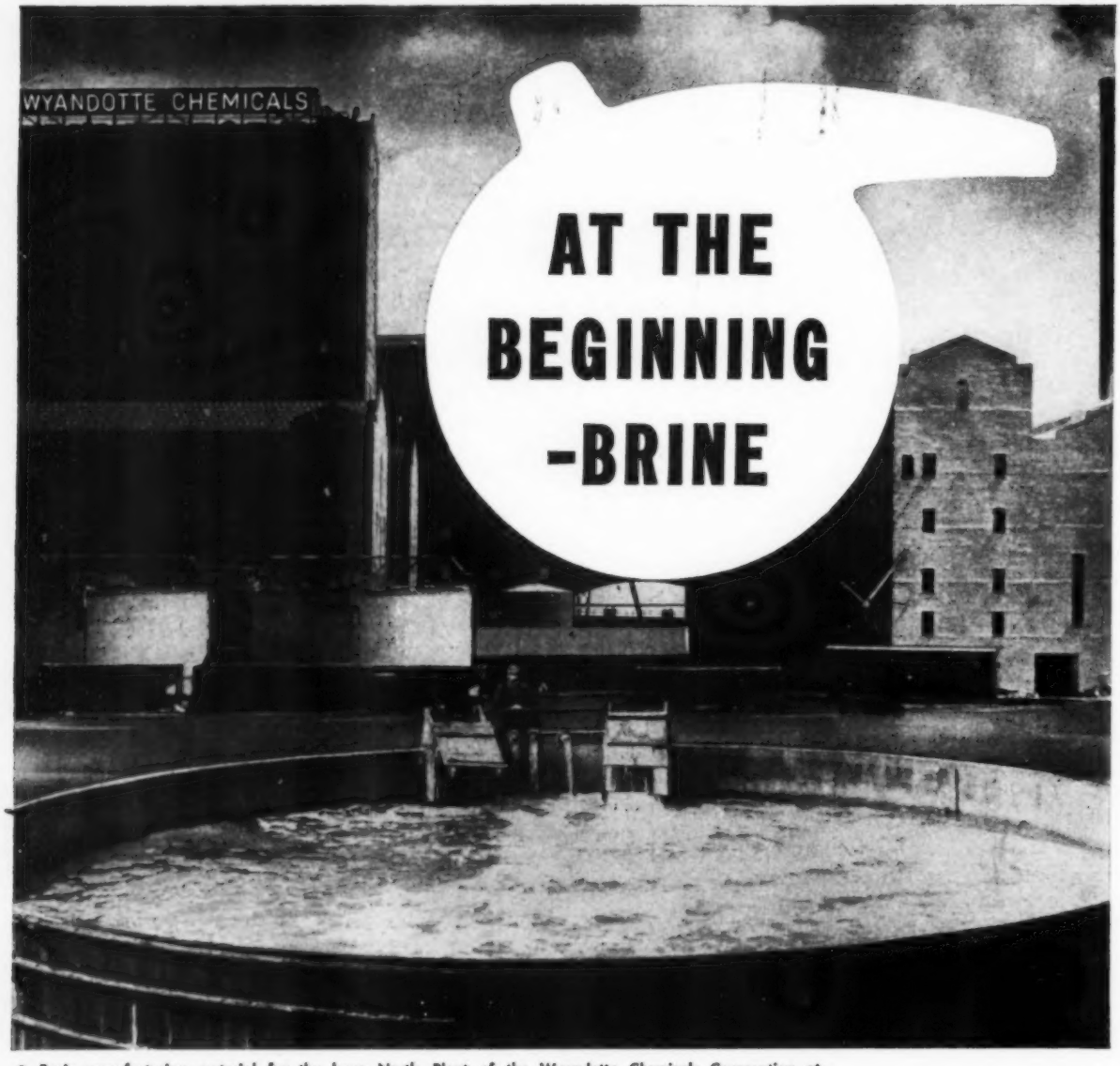
If perfumes above 2 or 3 per cent are to be solubilized in a 20 per

FORMULAE FOR SOLUBLE OILS

Ingredients in Per Cent	*1*	*2*	*3*	*4*
Mahogany soap	—	—	—	7.0
Sulfur oil	—	—	4.0	—
Lard oil or tallow	4.0	—	—	—
Tall oil	6.0	12.0	12.5	7.0
Sulfuric acid (66° Be.)	1.5	1.0	—	—
45% caustic potash	5.3	5.3	4.3	1.9
Diethylene glycol	3.0	3.0	2.0	1.5
Texas oil (100-300)	80.1	78.6	77.1	82.5
Cresylic acid	0.1	0.1	0.1	0.1

SOLUBLE OILS AS HAND SOAPS

Ingredients in Per Cent	*1*	*2*	*3*	*4*
Wood rosin	20.8	—	18.8	—
Tall oil	—	16.0	—	12.0
50% caustic soda	4.9	4.2	4.4	—
45% caustic potash	—	—	—	3.7
Pine oil (Phenol coefficient 7)	—	72.0	—	5.0
880 Pine oil (Phenol coefficient 4.5)	67.7	—	70.0	—
Low viscosity mineral oil	—	—	—	77.3
Diethylene glycol	—	—	—	2.0
Water	6.6	7.8	6.8	—
Phenol coefficient of disinfectant	3	5	3	—



• Basic manufacturing material for the huge North Plant of the Wyandotte Chemicals Corporation at Wyandotte, Michigan, is salt brine. Into this storage tank it pours 24 hours a day every day in the year—from six wells some 1400 feet underground. Daily brine production of this one tank is in excess of 412,000 gallons.

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SODA ASH	CALCIUM CHLORIDE	AROMATIC INTERMEDIATES
CAUSTIC SODA	CHLORINE	DRY ICE
BICARBONATE OF SODA	HYDROGEN	Other Organic and Inorganic Chemicals
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cent potash soap solution, an alcohol or glycol is necessary as a rule. A high per cent of soluble perfumes can be dissolved to form a clear solution in 20 per cent potash soap. Such stock solutions are of great convenience in making liquid toilet soaps. These compositions can be stored indefinitely without becoming cloudy. Andrew Treffler. *Chem. Industries* 55, No. 7, 922-4.

—— ♦ ——

Additive for Shaving Cream

A non-deliquescent salt capable of being dehydrated, such as sodium sulfate or magnesium sulfate, is mixed with an inert emollient substance for addition to soap in making shaving cream.

Examples of the materials to be added to soap are:

1. Dried sodium sulfate—1 part by weight
   Kaolin—1 part by weight
2. Dried sodium sulfate—10 parts by weight
   Triethanolamine—1 part by volume
   Castor oil—a sufficient quantity to make it a paste

When such a composition is applied to the moistened skin, it forms a cream. The osmotic action of the salt present produces a temporary local swelling of the underlying tissues, resulting in a temporary tension and anesthesia of the skin, which facilitates shaving.

Mixtures such as the above may be applied to the skin together with soap, or may be added to dried soap and the soap mixture may be applied to the skin. E. W. Willcocks. British Patent No. 559,867.

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Neutral Wash Bath

A bath for washing linen and other textile materials consists of an aqueous solution having a pH of 6.1-8 and containing isohexyl, isooctyl or dodecyl phenyl polyglycol ether 0.2 per cent, with sodium hexametaphosphate 0.1 per cent. Such a solution may also contain an oxygen-producing per salt. A. Volz, vested in the Alien Property Custodian. U. S. Patent No. 2,356,550.

Detergency Studies

Launderometer tests made with mixtures of Santomerse No. 1 or No. 3 with TSPP at 0.05 per cent in synthetic sea water indicate optimum soil removal for combinations of 80 per cent TSPP and 20 per cent Santomerse. At this low concentration TSPP alone removed more soil than either Santomerse product.

Tests made in hard water at 0.075 per cent concentration of Santomerse combined with various alkaline soap builders in 1:1 ratios of Santomerse No. 3 to anhydrous alkaline builder, showed the alkalies to decrease in effectiveness in the following order:

Trisodium phosphate
Tetrasodium pyrophosphate
Tetrasodium pyrophosphate - orthosilicate (1:1)
Tetrasodium pyrophosphate-trisodium phosphate (1:1)
Orthosilicate and metasilicate
Soda Ash

Further tests at the same concentration were made with hydrous builders on an "as received" basis but with Santomerse No. 1 to builder ratios of 67:33 and 75:25. The order of efficiency of the builders was the same as for the previous tests; there were negligible differences between the two ratios tested.

Detergent testing of several of the alkaline soap builders indicated relatively high soil removal at low concentrations in comparison with Santomerse No. 1, and accounts for improved detergency of its mixtures with alkali.

Burnt-umber dispersion values tend to corroborate detergent findings. J. C. Harris and E. L. Brown. Oil & Soap 22, 3-7 (1945).

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Oxidation Values of Oils

An oil sample dissolved in 2 ml. of carbon tetrachloride is treated with 10 ml. of sodium dichromate-acetic acid mixture containing 1 per cent of trichloroacetic acid as catalyst, in a thermostat at 25° C. for 2 hours. Add 50 ml. of water, 30 ml. of 25 per cent potassium iodide solution and 5 ml. of 6 Molar sulfuric acid. Dilute to 400 ml. and titrate with standard sodium thiosulfate solution. A new constant is proposed called the oxidation-iodine value. In terms of this constant, drying oils are more than 200, semidrying oils 100-200, and nondrying oils less than 100. D. Hu, Chen and P. Wong. J. Chinese Chem. Soc. 10, 30-9; through Chem. Abs.

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Packaging Soap

The problem of whether to put soap up in cartons or not depends on the shape of the cake and the whim of the manufacturer. Brick-shaped cakes can be machine-wrapped at high speed, and stocked and dispatched in larger fiberboard outer containers or even in wood, but oval and fancy-shaped cakes are liable to become bruised unless they are nested in not more than three or four to a box.

For medicinal soaps, especially if there is much wording to be incorporated in the pack, cartons seem more appropriate. Before any carton is finally decided upon, it is well to obtain a large number of proofs and build them up in a mass display. This shows which color predominates. If no definite note is struck, one of the main advantages of carton packing is lost. Also this shows whether the name of the product stands out clearly.

If the carton passes this test, it should be placed on a counter and surrounded by specimens of its competitors, since many of the large stores adopt this type of display. The carton must have sufficient individuality to be picked out from the group, not for eccentricity or complication, but for directness of color and lay-out. E. Richardson. Soap, Perfumery & Cosmetics 17, 894-7 (1944).

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Sterilization Method

All kinds of objects, materials, and gases such as the air of a room, can be sterilized by emission of the band spectrum type having an intensity maximum within the wave length range 2400-2500 Angstrom units. To produce this, an electric discharge occurs in a mercury atmosphere having a pressure in the range of 35-40 atmospheres. The objects to be sterilized are subjected to the emission thus produced. A. O. Cronvall. Canadian Patent No. 425,016.

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PRODUCTION *Clinic*

By DR. E. G. THOMSSEN, PH.D.

EVEN though we constantly refer to certain machinery as "automatic" the fact remains that it is automatic just as far as the human factor permits. For that reason the operator of any machinery, be it automatic, semi-automatic or designated by some other name, must necessarily take into account the human element. The success or failure of the equipment depends upon the men and women who run it. Unless they are competent, interested and cooperative, proper efficiency is not to be had. To obtain these helpful attitudes in the majority of cases, especially considering the present temper of labor, is not always an easy task for the production man. The make-up of certain employees and their attitude toward various new installations vary. If they feel, especially in normal times, that new installations will result in less work for them and their fellow employees, an antagonistic point of view is apt to be taken.

Some years ago it was decided to improve production speeds at three different plants in various parts of the country owned by the same company. Duplicate equipment was ordered in all three cases to carry out the same operations. In two of the plants excellent results were obtained, but at the third plant production lagged and the equipment came in for a lot of criticism, so much so that some of it was discarded in favor of part of the obsolete type which was pressed back into use again. To correct this condition, a mechanic from one of the other plants was sent

to the offending factory. He was not a foreman, but had the interest of the new production equipment at heart and was also the union shop steward at his home plant. He soon found that the reason the equipment was not producing was not because of the ordinary factory hands operating it were antagonistic, but because the foreman was peeved because he had not been consulted as to his ideas on the new installations. In turn he let the story go out that the people under him would not properly operate the automatic lines. A switch in foremen, together with the enthusiastic endorsement of the improvements by this mechanic, brought the offending plant into line.

This is a good example of one of the reasons why ordinary workmen sometimes are accused unjustly of being generally antagonistic to new and better ways of doing an old operation. While this may be true in certain cases, it is not the general rule. Far-seeing laboring people realize that their jobs depend upon efficient, competitive operations. They do justifiably object to too great a speed-up and constant monotonous operations without rest periods. Automatic equipment particularly, segregates operations to constant, repeated, simple ones. To overcome this monotony, not only is it a good plan to give at least ten-minute rest periods every two hours, but also to change the operations performed by an individual after every rest period when possible. This cuts down the humdrum and keeps the operators better satisfied. In some plants, occasional radio and musical programs are employed to divert the attention. It works well in most cases.

Another way to hold interest on production lines is to talk over the problems with the operators. Your interest in their work problems generally pays big dividends. Often just some small peeve of one of the workers may cost much production, unless it is corrected. The right of the employee to talk out pays. To attain speed-up cooperatively, wage incentive plans work satisfactorily. These usually are based on paying a bonus in increased hours for production beyond a fairly established quota. An advantage of this plan is that where a gang of employees are interested in the plan, they help to correct any slow operators who may prevent the rest from obtaining their pay bonus.

Through cooperative plans like these, plant efficiency is obtained. Wise production men today seek to gain the confidence, satisfaction and aid of their employees. These people upon whom so much depends are reasonable and usually real folks. It is not too difficult to establish a proper espirit de corps among them by enlisting their interest and help in production problems.

Sprayers and Dusters

Dobbins Manufacturing Company of North St. Paul, Minn., and Elkhart, Ind., have sent us their catalogue describing their line of sprayers, dusters and other metal specialties, including their mop pails. This catalogue is well

Orders Should Be Placed Now for

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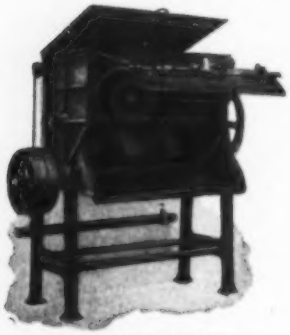
SOAP MACHINES

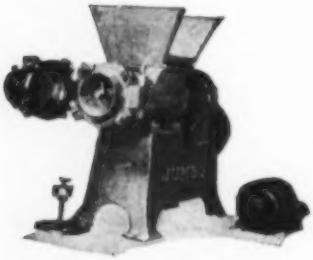


IDEAL AMALGAMATOR
so designed that soap can be emptied into hopper of mill or plodder.

Already many soap manufacturers are anticipating their post-war needs for Houchin Soap Machines to be delivered when present restrictions are lifted.

These orders will be filled in sequence of their placing with us.

Let us know what you will require.



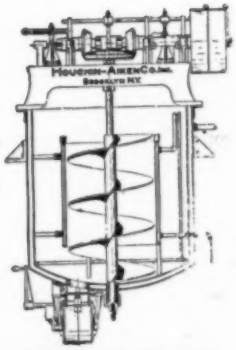
JUMBO COMBINATION PLODDER
for milling toilet soap ribbons and for producing finished bars.

THE HOUCHIN LINE includes equipment for making—

LAUNDRY SOAP
TEXTILE SOAP
CASTILE SOAP
SCOURING SOAP

by boiled, half boiled or cold process. Equipment for new plants or to remodel old plants.

AUTOMATIC SOAP CUTTER
Capacity 60/120 frames per day.



PERFECTION CRUTCHER
for making cold-made half-boiled and floating soaps.

TYPE F ROLLER MILL
Rolls 18" x 40" water cooled. Heavy frames, large bearings. Gears run in oil. Gears and bearings entirely covered.

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illustrated, gives complete descriptions of the long line of pressure sprayers, knapsack sprayers, flame sprayers, floor oil sprayers, soap sprayers, chemical sprayers, atomizers both continuous and intermittent, dust guns, pump dusters, wheelbarrow dusters, bucket spray pumps, barrel spray pumps and power sprayers. Numerous types and sizes are included. Various sprayer accessories are also illustrated. One page is devoted to a technical article on insecticides and fungicides.

Anyone engaged in the marketing of household or agricultural insecticides or the application of disinfectants and floor oils or the proper use of detergents should obtain a copy of this catalogue.

Precision Bore Glass Tubing

Fischer & Porter Company, Hatboro, Penn., in sending us their literature on precision bore glass tubing and specialties, inform us that seven years ago such glass tubing was obtainable from but one single foreign plant. Due to the development of their "Glo-Tech" process, a new source in America now is available. This company illustrates many specimens of their tubing of all shapes and sizes. Standard sizes of from 0.013 inches I.D. to 6 inches I.D. in lengths up to 100 inches are offered. The extreme accuracy of tolerances of 0.0002 inches are obtained. Prices are said to be only about one-third those of the foreign make. This tubing is required in the laboratory and for manometers, barometers, viscometers, absorption cells of both fused and jointless types, possessing high accuracy.

Laboratory Mixers

Read Machinery Company of York, Penn., are well known in the chemical and industrial equipment field for the varied type of products they build. These include items like chemical mixers, shredders, vacuum dryers and mixers, weighing hoppers, sifters, liquid weigh tanks, and special process equipment. Among other items they feature a new, easy to clean and dismantle, laboratory mixer in one, three and six-quart working capacities. Easily interchangeable mixing arms are also available. These small mixers are constructed out of stainless steel or non-ferrous alloys and may be had with the mixing bowl jacketed for heating and cooling. Vacuum or vapor tight covers may also be had. The motors sized ½, ¾, and 1½ HP are the convenient reversible head, geared type. The bowl may be easily tilted by a handle which acts to lock it when it is operating. Other conveniences like overlapping mixing action, and split packing glands are built into the mixer. A mixer like this is a handy piece of equipment to have around a plant or laboratory for mixing small and experimental batches. As a pilot plant installation it helps to shorten the step-up to large size batches.

Insecticide Price List

R. J. Prentiss Company of New York City, have issued an interesting price list of their line of drugs, chemicals and insecticides. First, it lists prices of the items they sell to the stock-medicine, drug, distilling and insecticide trades. These consist of practically all of the drugs and insecticides of botanical origin. Following these the chemicals are listed and priced. In the rear of the catalogue is a glossary of the botanicals which serves as a convenient reference to the long list of these products they handle. Their fortified red squill powder is featured in a double page spread in the center and other terse advantageous information is scattered throughout the book. This company has greatly extended their line in recent years and this price list is a convenient one for purchasing agents and production men to have on file.

A Small Dry Filler

The Weigh Right Automatic Scale Co., Joliet, Ill., has sent us their leaflet describing their Model A Pakking Filler. This filler which runs quietly without vibrating and fills cleanly has several desirable features. It may be used by small and large manufacturers; both coarsely and finely ground materials may be filled equally well; it can easily be moved from place to place; it is flexible, filling from 24 to 35 packages per minute and from ⅛ oz. up to 5 oz. (or more); it is simple and compact; it may be adjusted by fingertip controls with very small variations in weight; and it is sturdily but not clumsily built. Weigh Right Scale Company also produce machines for filling all styles of packages with dry products in the soap, disinfectant, food and insecticide field. They furthermore make carton sealing machinery. Their equipment is either semi- or fully automatic. Full information regarding their line may be had by addressing them at Joliet, Ill.

New Musk Patent To Sparhawk

A method of producing musk from muskrats, skunks, mink, deer and other animal sources has just been patented by Charles V. Sparhawk, Sparkill, N. Y., U. S. Patent No. 2,368,578. Mr. Sparhawk advises that this is the first American patent concerned with musk made from domestic glandular material, and that the products obtained through the newly patented method are the first commercial articles developed in the United States to compete with imported fixative materials such as Asiatic musk and Abyssinian civet. Two commercial products now being marketed by Sparhawk Co. are "Muskat," derived from muskrats, and "Petra" from skunks.

Mr. Sparhawk points out that the development of an American source for musk will be of great assistance to American perfumers since it will make them less dependent upon imported materials, with their inevitable threat of fluctuating prices and supplies. Our domestic supply of the animals from which the glandular material can be extracted is said to be almost unlimited, and a return to the trapper for the glandular material will make a worthwhile addition to the primary income which he derives from the animal pelts.

Of the eight claims in the new Sparhawk patent, one of the inventive virtues which the U. S. Patent Office has recognized is the treating of the glands in a solid, frozen condition. This is said to make it possible to grind and handle the animal tissues in a concentrated form. The resulting material is firm, dry and easily subjected to the necessary solvents. This method of handling is further advantageous in that it allows the defatting treatment to be complete and thorough, thus eliminating at the start any trace of the obnoxious ingredients.

Dentifrices

Various types of tooth powders are in general use, including the foaming type and medicated powders. An example of the former is as follows:

Precipitated chalk, dense	160 lbs.
Calcium sulfate	20 lbs.
Neutral white soap powder	30 lbs.
Saccharine	5 oz.
Flavor	3 lbs.

The more popular medicated powders contain a perborate as the medication, as in the following:

1. Precipitated chalk, light	100 lbs.
Precipitated chalk, dense	100 lbs.
Powdered sugar	10 lbs.
Sodium perborate	25 lbs.
Flavor	4 lbs.
2. Precipitated chalk, dense	150 lbs.
Magnesium carbonate	25 lbs.
Saccharine	5 oz.
Flavor	4 lbs.
Calcium peroxide	25 lbs.

Tooth pastes sometimes offer the problem of deteriorating on storage for no known reason. The proper type of equipment, including mixers, ointment mill and fillers, should be adapted to the particular product being made. It should be of tin-lined metal, glass-lined, or stainless steel, according to use. A nonfoaming tooth paste may be made from the following:

Simple syrup, U.S.P.	5 lbs.
Mineral oil, heavy	5½ lbs.
Glyceride of starch, U.S.P.	111½ lbs.
Precipitated chalk, light	83 lbs.
Magnesium carbonate	2 lbs.
Calcium sulfate	5 lbs.
Milk of magnesia, U.S.P.	36 lbs.
Saccharine	2½ oz.
Gum tragacanth	2 oz.
Flavor	4 oz.

A detergent such as an alkyl sulfate or alkyl aryl sulfate ("Duponol" or "Nacconol") may replace a part of the chalk to give a foaming type of paste. E. G. Thomssen. *Drug & Cosmetic Ind.* 55, No. 6, 672-3, 748-53 (1944).

Brush for Spot Removal

To help solve the problem of removing spots such as ink, grease, paint, etc., from fabrics, the Rivet-O Manufacturing Co. of Orange, Mass., has developed a unique small fountain brush. The cleaning fluid is contained in a long bottle of relatively small diameter, which also serves as the handle to the brush. This bottle handle can be unscrewed and refilled. The cleaning fluid flows through a specially designed neck out through the brush itself. The flow of fluid is controlled by a finger-tip operation of a push button.

Shorter Textile Scouring

The kier or jig scouring method, which is the real bottleneck in cotton processing, has been eliminated from certain processes by the introduction of continuous steaming. The use of a steamer for scouring need not be confined to any particular type of cloth, nor limited by the subsequent treatment of the cloth. Plant-scale experiments by Mathieson Alkali Works have demonstrated that most cloth may be efficiently scoured in half an hour. Even with heavy cloth, good scouring, mote removal and absorbency may be obtained in one caustic steaming of not over an hour's duration. The cloth so obtained is suitable for bleaching by any of the processes in use or for direct dyeing in any shade that normally requires an unbleached dye bottom. The steamer may also be used for hot bleaching processes. *Rayon Textile Mo.* 25, 591 (1944).

Tall Oil Processing

Hydrogenated tall oil is treated to separate fatty acids from a solution of the oil. The oil is first hydrogenated to an extent such that fatty acids more unsaturated than oleic are converted at least to oleic acid. The treated oil is dissolved in a suitable solvent and the temperature lowered to effect precipitation of fatty acids. These are then removed.

In a somewhat similar treatment, after the tall oil is hydrogenated, it is saponified and then dissolved in an organic solvent. The temperature is lowered sufficiently to cause precipitation of the fatty-acid soaps, which are then removed from the solution containing the remaining resins. E. Segessemann, to National Oil Products Co. Canadian Patents 424,381 and 424,382.

Determination of Detergency

Detergency can be measured only by washing tests. Such properties as surface tension or emulsifying capacity of the cleaning agent are not an accurate measure of detergency, because this depends not only on the cleaning agent but also on the grease removed, the duration of washing, and the temperature of the bath.

A proposed method utilizes the Toussaint photocolorimeter. A soiled wool sample is washed for 15 minutes at 70° C. The dirt contained in benzene used for cleaning is taken as "standard soil." The cleaning agent is added in varying quantities to a 2 per cent soda solution, calculated on anhydrous soda ash. M. Ringeissen. *Teintex* 8, 31-7; through Chem. Abs.

Tests of Antioxidants

Results with the active-oxygen method and those obtained with the Barcroft- Warburg constant - volume manometric apparatus at 70° C. are in good agreement with storage tests at room temperature on lard to which no antioxidant is added, and on lard to which lecithin alone is added. With lard to which d-isoascorbyl palmitate or d-isoscorbyl monostearate, in concentrations between 0.01 and 0.1 per cent, is added, the results with the Barcroft-Warburg apparatus are in much better agreement with storage tests than are those of the active-oxygen method.

The d-isoascorbyl esters in 0.01 to 0.1 per cent in lard usually behave as antioxidants with the active-oxygen method and as pro- or antioxidants, depending on their concentration, with the Barcroft-Warburg apparatus and during storage at room temperature.

This study demonstrates that in testing new compounds for antioxidant properties, conclusions should not be drawn from results obtained when the experimental conditions of the test are very different from the conditions under which the antioxidant is to be used. It emphasizes the importance of correlating the results of accelerated tests with those obtained by storage tests. J. J. Nagy, F. C. Vibrans, and H. R. Kraybill. *Oil & Soap* 21, 349-52 (1944).

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U.S.I. CHEMICAL NEWS

March ★ A Monthly Series for Chemists and Executives of the Solvents and Chemical Consuming Industries ★ 1945

Alcohol-Water Injection Proves Key to Huge Power Increase in Gasoline Engines

Official U. S. Navy Photo

A Helldiver earns its name! On many combat planes, alcohol-water injection provides priceless minutes of super speed.

Present Large-Scale Use on War Planes Seen Extending to Cars, Buses and Trucks

During 1944, the curtain of censorship was lifted just far enough to give motor-minded America an enticing preview of a wartime development that will go far to step up the performance and operating economy of postwar passenger cars and commercial vehicles. The development was the injection of a mixture of alcohol and water into the gas-air stream of the engine.

Extra Horsepower

The first story broke in May of last year. Dramatically it told how a famous Navy fighter pilot owed his life to the new development. A sudden burst of extra speed, released at the flick of a switch, had enabled him to streak out of range of three pursuing Zeros. Later stories revealed how alcohol-water injection was supplying extra power for take-offs and steep climbs.

The limiting factor, of course, is the amount of the alcohol-water mixture that is carried on a plane. At present, only enough is carried to give the plane a few minutes flying at the higher speed. But those are the critical minutes that can mean the difference between getting the jump on Jerry—and disaster.

The Theory

Every motorist has experienced the "lift" a gasoline engine gets on a damp day or after dark when humidity is high. The explanation, as automotive engineers know, is to be found mainly in the internal cooling action of the water. This cooling action tends, to smooth out the progress of the flame front during combustion, applying more uniform pressure on the piston head throughout the stroke. Self-ignition of the compressed hot gas is prevented so that detonation does not occur.

(*Continued on next page*)

Non-Permit Alcohol Developed by U.S.I. for Aircraft Use

Vitol Special Widely Used for Test Purposes and Deliveries

One of the problems facing the aircraft industry right at the outset of the alcohol-water injection program was to find a suitable alcohol for test, experimental, and delivery purposes. The Armed Forces themselves, of course, could use any alcohol they chose without securing a permit. To private aircraft companies, however, any specially denatured alcohol would have entailed securing alcohol permits and the inescapable red tape and inconvenience associated with the use of specially denatured alcohol.

The aircraft industry needed a proprietary product that met Army and Navy specifications on the one hand, and was approved by the Treasury Department for use without permit on the other.

Vitol and Vitol Special

As a result of its early work on alcohol-water injection in conjunction with the Vita-Meter Corporation, U.S.I. had developed a proprietary formula which solved the immediate problem. The formula had been approved by the Alcohol Tax Unit of the Treasury for use without permit and the product was ideally suited for use in the operation of aircraft engines. Early last year, "Vitol" made its entry into the aviation field and was used extensively in testing combat aircraft.

The Army and Navy specifications, however, called for a different denatured alcohol

(*Continued on next page*)

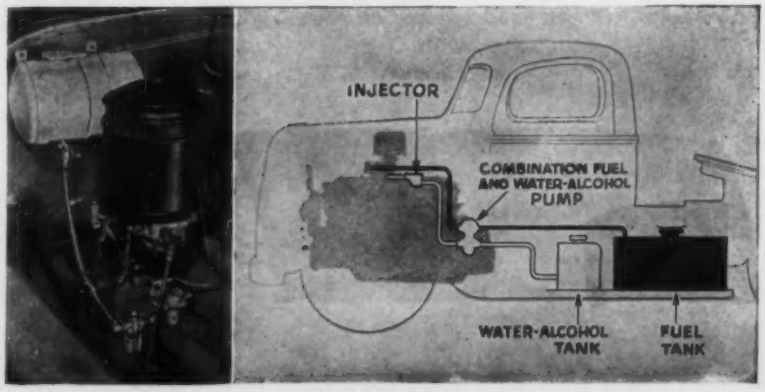
Lube Oil Additives Made by New Process

For years, high-pressure lubricants such as those used as cutting oils and for heavy-duty truck transmissions, have been prepared by adding small amounts of sulfurized oils to regular lubricants.

A recently granted patent covers an improved method of preparing such sulfurized mono-esters of fatty acids for use as lubricant improvers. A feature of the new process is that glycerine is reclaimed.

Fatty glycerides, prepared by mixing lard oil and cottonseed oil, were heated to approximatetly 330 deg. F., and a small amount of sulfur added. The sulfurized glycerides thus obtained were then reacted with a mixture of butanol and sulfuric acid. When the reaction was completed, the mixture stratified into an ester layer above and a glycerine-acid layer below. The ester layer was neutralized with lime. After further refining with activated clay, the treated oil was filter-pressed out.

The glycerine-acid layer was further refined to recover the glycerine.



(Below left) Typical passenger car installation. (Right) Schematic diagram of alcohol-water injector installation on truck. Although a small additional fuel tank is required, the increase in power and engine life far outweigh the disadvantage.

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March ★ **U.S.I. CHEMICAL NEWS** ★ 1945

Alcohol-Water Injection

(Continued from preceding page)

Water has a high latent heat of vaporization (970 Btu per lb) so that if internal cooling were the only factor, there would be no point in using alcohol (367 Btu per lb). However, extensive tests have shown that alcohol alone and alcohol-water mixtures give better results than water alone; and water will freeze at low temperatures. When alcohol is used, peak pressure is delayed until the piston is further down its stroke and a more efficient cycle is obtained. Important, too, less engine roughness is encountered at high-power output; life of bearings and other engine parts is prolonged.

Postwar Possibilities

A vast amount of research has been done on alcohol-water injection into the gas-air stream of aircraft engines which, while details cannot now be revealed, points to its increasing use in this field. Its wide use on supercharged aircraft engines already has given remarkable results.

In January of this year, three engineers of Thompson Products, Inc. delivered a paper before the S.A.E. describing their extensive tests on alcohol, alcohol-water and water injection in truck and passenger car engines. Their conclusions, while pointing out the need for greater research, are highly significant. They may be summarized as follows:—

1. The control of pressure rise and shock with alcohol-water injection may facilitate the design of higher-compression engines of minimum weight.
2. That it will be particularly effective if supercharging is used on ground vehicles. Here, it would enable the engine to consume more air at the same engine speed.
3. That it may have a great field of use in light aircraft, designed to operate on ground-vehicle fuels.
4. That it will tend to maintain cleaner engines with softer, more easily removed carbon deposits.
5. That best gains through its use are realized when fuel about 12 octane numbers below engine requirements is used.
6. That it will effect economics, by permitting the use of lower-grade fuel, which will extend its use to many operations.

Acetone Aids Recovery of Biotin from Waste

Biotin, an important part of the B-complex vitamin, can be recovered from waste fermentation liquors, according to claims made in a newly granted patent assigned to a leading laboratory.

Mother liquors from fumaric acid fermentation processes are treated with sufficient activated charcoal to absorb the biotin. Biotin is then extracted from the charcoal. Among the extracting agents suggested is an aqueous solution of 60 per cent acetone and 2½ per cent ammonia.

Non-Permit Alcohol

(Continued from preceding page)

—S.D. No. 3-A. To help aircraft builders avoid the necessity for securing a permit to use S.D. No. 3-A, U.S.I. altered its original formula and produced Vitol Special.

Vitol Special is essentially the same as the product called for by Army and Navy specifications and performs equally well. But it has a strong, non-alcoholic odor added which warns against its misuse. Being a proprietary product, it requires no permit and the markings on the drums show no reference to alcohol.

Penicillin vs. Heart Disease

Sub-acute bacterial endocarditis, a heart disease from which recovery was rare, is responding to penicillin, according to reports from two New York hospitals. The "cure" is effective only where the organism is a streptococcus sensitive to the drug.

Present type alcohol-water injector mounted on Flange, set between carburetor and manifold.

TECHNICAL DEVELOPMENTS

Further information on these items may be obtained by writing to U.S.I.

Light-fast acetate dyes, including reds, greens, blues, oranges, browns, yellows and violets, are offered for use on both cellulose acetate rayon and nylon. Color fastness varies with the depth of the color. **(No. 911)**

USI

First-aid burn treatment is offered in a new ointment which is designed to stop pain, exclude oxygen, prevent infection and stimulate healing. **(No. 912)**

USI

A new anti-stick agent is claimed to facilitate removal of molded plastics from the mold. The liquid, packaged in pint bottles, is said to saturate the mold, making it free ejecting for a large number of parts before another application is needed. **(No. 913)**

USI

Freeze-and-thaw resistant concrete is claimed to result from the use of a new-type portland cement. An added air-entraining material is said to give this new quality, plus cohesion and uniformity. **(No. 914)**

USI

A substitute for camphor, in nitrocellulose, is one of the uses suggested for a new chemical described as having the properties of both a high boiling solvent and a volatile plasticizer. It remains fluid down to —70 deg. C. **(No. 915)**

USI

To overcome odors, no matter how noxious, a chlorophyll air freshener is offered for industrial and commercial application. Designed to be used in connection with air conditioning or ventilating systems, it may also be used in non-conditioned spaces. **(No. 916)**

USI

A stable organic peroxide is claimed by its manufacturer to be insensitive to shock, to form clear, bubble-free films, and to be useful as a catalyst in bulk polymerization. It is soluble in all common organic solvents. **(No. 917)**

USI

New flame-resistant gasketing is offered in 1/8 in. and 1/16 in. thicknesses, with the added claim that it is suited for joint seals in ventilating systems and water, fusel-oil and diesel-oil systems. Other suggested uses include gasketing for airlock and refrigerator doors. Pressures up to 25 p.s.i. can be maintained. **(No. 918)**

USI

A fluorescent plastic dye, in solution form, is stated to impart fluorescence to any type of plastic. Suggested uses include decoration, dials, medical equipment, etc. **(No. 919)**

USI

Plywood panels 50 feet long, and up to 8 feet in width and 1¼ inches in thickness, are on the market. Laminations are bonded with phenolic-resin adhesives. **(No. 920)**

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PRODUCTS AND PROCESSES

Soapless Detergent

A detergent composition is prepared from a small amount of a water-soluble alkyl ether of cellulose such as methoxy and ethoxy celluloses, known commercially as Tylose and Colloresin, added to an alkyl mononuclear aryl sulfonate. The alkyl group contains preferably 12 - 18 carbon atoms in an open chain. H. Seyferth, to Allied Chemical & Dye Corp. U. S. Patent No. 2,347,336.

Emulsifying Agent

An amylaceous emulsifying agent is prepared by treating starch with an alcoholic solution of hydroxides. The compound obtained after mechanical purification is readily water-soluble with spontaneous hydrolysis and is useful in making oil-in-water dispersions and emulsions of wax. K. M. Gaver, to The Komel Corp. U. S. Patent No. 2,347,678-80.

Surface-active Agent

Aromatic hydroxy compounds are caused to react with more than one molecule of an aromatic vinyl compound in the presence of acid substances having no polymerizing effect. An alkylene oxide is added to the product to make it water soluble. W. Munster and B. Schmitt, to I. G. Farbenind. A.-G. German Patent No. 740,104; through Chem. Abs.

Detergent Bars

A non-soap detergent is prepared in bar form from a solid water-soluble salt of a sulfated fatty alcohol having more than 8 carbon atoms in the alkyl group. Such a compound should be resistant to precipitation by hard water and have good detergent properties. Also present are a polyhydric alcohol partially esterified with a fatty acid having at least 12 carbon atoms in the molecule, and 5-40 per cent of sodium or potassium chloride. The amount of polyhydric alcohol ester should not be over 33 per cent. Such a mixture is of good stability and is resistant to undesirable slime formation when wet. R. C. Wood, to The Procter & Gamble Co. U. S. Patent No. 2,356,903.

Cleaning Wool

Aqueous solutions of salts of high molecular organic acids and organic bases are used for washing wool free of pitch. The bases are added in excess so that the concentration of the bath is higher than is commonly used. J. Nusslein, R. Gutensohn and H. Haakh, to I. G. Farbenind. A.-G. German Patent No. 739,739; through Chem. Abs.

Sulfated Detergent

Water-soluble salts of sulfated hydroxy alkyl amides are produced in a form substantially free of extraneous organic materials by condensing a monohalide of a fatty acid such as the mixed chlorides of coconut-oil fatty acids, with a monoalkylol amine such as monoethanol amine. This gives a quantitative yield of a hydroxy alkyl fatty-acid amide. The product is sulfated at the hydroxy group, and the sulfate neutralized with caustic soda. The product is a detergent and sudsing agent. H. Bertsch, to The Hydronaphthene Corp. U. S. Patent No. 2,355,503.

Synthetic Detergent

Compounds suitable for use as detergents are made by reactions involving the use of sulfophthalic anhydride, hexanol and caustic soda or other alkali. M. Kosmin, to Monsanto Chemical Co. U. S. Patent No. 2,355,592.

Laundry Detergent

A composition adapted for commercial laundry use is prepared by adding to a powdered alkali metal hydroxide an oil of the high fatty acid-glyceride type such as cottonseed or soybean. This is used in just sufficient an amount to form a thin film on the surface of the alkali particles without causing them to adhere. The oil and alkali are mixed in the presence of enough moisture to cause an exothermic reaction to occur. This results in the formation of an intermediate layer of soap salted out at the interface between oil and alkali. The composition is spread in thin layers to allow it to cool without charring. H. G. Bissinger to Drew Associates, Inc. U. S. Patent No. 2,356,443.

Cationic Agent

A cationic surface-active agent is prepared by the reaction of oleic acid with diethylene triamine. Rice oil or soybean oil may be used in place of oleic acid, and ethylene diamine in place of the triamine. This compound stabilizes emulsions of mineral and other oils in water to the point of inverted phase. J. H. Fritz and E. A. Robinson, to National Oil Products Co. U. S. Patent No. 2,347,178.

Cleaner for Machine Parts

A composition for removing carbon, dirt, grease and paint from machine parts is formed of neutral coal-tar oil 40 parts, monoethanolamine 15, oleic acid 15, ethylene glycol 15, *ortho*-toluidine 15, ethyl silicate 0.5 and phosphoric acid 0.5 parts. M. I. Bowman and H. Packer. U. S. Patent No. 2,356,747.

Glucoside Compounds

By the use of glucose and glycol chlorohydrin heated in the presence of an acid catalyst, products are obtained suitable for use as textile agents. They possess cleansing and emulsifying power. A. Chwala, vested in the Alien Property Custodian. U. S. Patent No. 2,356,565.

Soap in Leaf Form

An aqueous solution of methyl cellulose is mixed with a liquid soap such as green soap and the mixture dried in the form of a thin film. C. W. Mabley. U. S. Patent No. 2,356,168.

Cleaning Aid

Alkali-pectin compounds are used as fat-free detergents. W. Fischer. German Patent No. 739,694; through Chem. Abs.

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No. 2,365,245, Insecticide, patented December 19, 1944, by Wesley G. Bruce, Dallas, Tex., dedicated to the free use of the People in the Territory of the United States. The method of controlling larvae which breed in animal droppings comprising adding to the feed of the animal zinc oxide.

No. 2,366,027, Detergent and Wetting Compositions, patented December 19, 1944, by Clyde O. Henke, Wilmington, Del., assignor to E. I. du Pont de Nemours & Co., Wilmington. A composition of matter having detergent and wetting properties, comprising 1 to 15 per cent by weight of a water-immiscible alcohol, 1 to 20 per cent by weight of a water-miscible alcohol, the said percentages being based on the weight of the sulfonate hereinafter defined, and a water-soluble saturated hydrocarbon sulfonate from the group consisting of sulfonic acids and water-soluble salts thereof, having at least 5 carbon atoms and being the residue left after extraction in the liquid phase with a hydrocarbon which is solid at 20° C. of the aqueous mass obtained by hydrolysis of a crude reaction mass comprising sulfonylchloride derivatives of non-aromatic hydrocarbons having at least 5 carbon atoms in admixture with unreacted hydrocarbons of the same group.

No. 2,366,334, Preparation of Powdered Soap, patented January 2, 1945 by Alfred G. Houpt, Springdale, Conn., assignor to American Cyanamid Co., New York. In a process of separating the fatty acid soaps of black liquor soap from the rosin acids by forming a hot, substantially anhydrous solution of fatty acids, rosin acids and an amount of alkali sufficient to neutralize only the fatty acids in an organic solvent in which the alkali soaps of the fatty acids are soluble hot but not cold, and in which the rosin acids are soluble hot and cold, and, after cooling said solution to precipitate the soaps of the fatty acids which are then separated from the mother liquor, the steps which comprise washing the separated soaps with more of the dry organic solvent until the rosin content is sufficiently low to allow drying without melting, gumming and sintering and drying the fatty acid soaps under vacuum and at a temperature not exceeding 80°C. whereby there is obtained a free-flowing soap-powder.

No. 2,366,759, Brushless Shaving Preparation, patented January 9, 1945 by Richard Thomas, Bromborough, England, and Harry Whitham, deceased, late of Upton, Wirral, England, assignor to Lever Brothers Co., Cambridge, Mass. A substantially non-aqueous brushless shaving preparation in stick-like form and adapted to be applied directly to the face, formed of a mixture comprising approximately 30 per cent to 60 per cent of a vegetable oil and approximately 30 per cent to 50 per cent of a waxy substance so that the mixture is sufficiently solid to be self-supporting when applied to the face without the use of an applicator other than the stick itself and sufficiently plastic when rubbed on the face to leave a layer of the mixture, and an emulsifying agent of the glycerol ester type in an amount of not more than 10 per cent for imparting hydrophilic properties to said preparation.

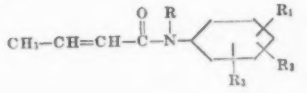
No. 2,367,155, Insecticidal Composition, patented January 9, 1945 by Friar M. Thompson, Jr., Wilmington, Del., assignor to Hercules Powder Co., Wilmington. An insecticidal composition comprising an active ingredient selected from a plant body of the group consisting of comminuted derris root, cube root, timbo root, and pyrethrum flowers and a terpene haloacyl ester for enhancing the toxic effect of the active ingredient.

No. 2,367,534, Parasiticides, patented January 16, 1945 by Frank B. Smith and John N. Hansen, Midland, Mich., assignors to The Dow Chemical Co., Midland. An insecticidal and fungicidal composition comprising as a toxic ingredient a compound selected from the class consisting of the diaryl-guanidine and aryl-biguanide salts of dinitro-phenols in intimate mixture with a carrier.

No. 2,367,971, Method of Producing a detergent, patented January 23, 1945 by John J. Spiegler, Newark, N. J. The process of producing a washing and cleaning agent which consists in mixing approximately six parts by weight of sodium hydroxide (38°Be.), and about twenty-eight parts by weight of borax, adding about twenty-two parts by weight of hydrogen peroxide of 30 per cent by weight concentration, and about twenty-two parts by weight of sodium silicate (36°Be.) thereto, stirring the mixture until it becomes gelatinous, pouring the resultant mass onto a surface, and permitting said mass to dry.

Re. 22597, Parasiticidal Preparations, patented January 30, 1945 by Elbert C. Ladd, Passaic, N J., assignor to United States Rubber Co., New York, A fungicidal composition comprising a carrier and 2,2,4,6,6-pentachloro-4 cyclohexenedione-1,3 as an essential active ingredient.

No. 2,368,195, Insecticidal Compositions, patented January 30, 1945 by Edgar C. Britton, Gerald H. Coleman and Wesley D. Schroeder, Midland, Mich., assignors to The Dow Chemical Co., Midland. An insecticidal cidal composition comprising an active toxicant mixture consisting of a crotonamide having the following formula:



wherein R represents an alkyl radical containing from 1 to 4 carbon atoms, inclusive, R1, R2, and R3, each represents a member of the group consisting of hydrogen and hydrocarbon radicals, and a product selected from the class consisting of the extracts of pyrethrin- and rotenone-bearing plants.

No. 2,368,578, Process of Producing Musklike Preparations, patented January 30, 1945 by Charles V. Sparhawk, Sparkill, N. Y. A process of obtaining a musk-like material from the greasy, oily, odoriferous animal glands, which comprises treating said glands in pulverized condition first with hydrophobe and then with hydrophile solvents, said hydrophobe solvent being a water immiscible low molecular weight ether, and said hydrophile solvents being selected from the group consisting of the water miscible low molecular weight monohydric alcohols, ketones and esters.

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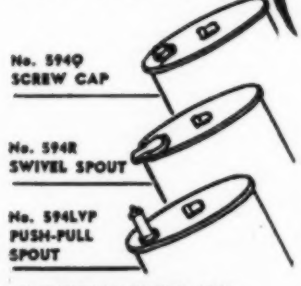

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Analyze Soap Operating Ratios

A chart of operating ratios for 2688 firms in 86 industries, including soap, is being distributed by the Association of American Soap and Glycerine Producers. The data were compiled by the National Industrial Conference Board, based on studies made by the Federal Trade Commission of corporate reports for the year 1940. The following ratios are given for the 20 soap companies whose costs are analyzed.

	Cents per Sales Dollar	Position
Direct Material	50.35	18th
Direct Labor	3.44	89th
Other Labor	2.53	71st
Depreciation	1.25	75th
Repairs and Maintenance	1.43	65th
Other Costs and Finished Goods	4.22	74th
Corporate Taxes	2.93	2nd
Social Security and Pension Fund Payments	0.49	88th
Research and Development Expense	0.55	31st
Selling and Delivery Expense	8.89	34th
Advertising Expense	10.94	4th
Administrative and General Office Expense	2.30	78th
Uncollectible Accounts	0.16	43rd

TGA Committees Report

The Toilet Goods Association has just mailed to members a series of reports by its committees on packaging, raw materials, labor relations, surplus commodities and foreign trade. The packaging committee predicted that pre-war packages and pre-war materials will be used by the toilet goods industry for some time after the war. As to the raw material supply outlook the booklet points out that no information is as yet available on the condition of the French essential oils industry and it is possible that no stocks originating from the Grasse area now exist. It is predicted that many oils will continue to be produced in Central and South America during the post-war period because of lower labor costs.

Lund Reviews Oil Outlook

"We need imports of lauric acid oils to produce the type of soap to which we are accustomed; we need other technically important oils that other nations can provide and at the same time we need foreign markets for our products in order that our industry can expand," declared Charles E. Lund, Chief, Fats and Oils Unit, Bureau of Foreign and Domestic Commerce, Washington, D. C., in an address before the National Association of Margarine Manufacturers, Chicago, recently. In his talk, Mr. Lund reviewed the history of the oils and fats situation from the middle Twenties, with particular emphasis on what has taken place during our war years. "Prior to the war," he pointed out, "18 per cent of United States new supply of all fats and oils was imported each year. Wartime exigencies have resulted in a decline in this dependence to nine per cent. Reduced imports have not, however, forced a like curtailment of consumption since domestic produc-

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tion has been expanded to a degree considerably greater than loss of foreign markets," he declared. However, he did not advocate a policy of self-sufficiency for the United States with regard to fats and oils.

Soap for New Army Kit

Four four-ounce cakes of all-purpose soap in a plastic container are part of a new and improved barber kit developed by the Quartermaster Corps of the Army and announced Feb. 19, by the Jersey City (N. J.) Quartermaster Depot. The all-purpose soap, it is said, can be used with salt or fresh water of any degree of hardness. It can be used for shaving, and has been approved by the Surgeon General for use in sterilizing instruments. About 2,800,000 pounds of soap are purchased each month at the Jersey City Quartermaster Depot in the four-ounce size, while 13,000,000 cakes in the two-ounce size were purchased in a recent three-month period to be included in the Army's "10-to-1" ration, the announcement states. 22,000 of the new barber kits have been purchased at Jersey City, and will replace the old-style kits as soon as the stocks are depleted.

Soap Deliveries Up in 1944

Soap deliveries for the fourth quarter of 1944 were higher than those for the fourth quarter of 1943, and deliveries for the year 1944 were also substantially greater than those for 1943, according to a release issued last month by the Soap Association. The figures are based on reports by 71 manufacturers producing about 90 per cent of the soap manufactured in the United States. Deliveries of soap other than liquid by 61 of the reporting manufacturers amounted to 860 million pounds for the fourth 1944 quarter or 5.3 per cent more than the previous quarter. Total deliveries for 1944 by the same group of manufacturers amounted to 3,291 million pounds, an increase of 16.4 per cent compared with 1943. Liquid soap deliveries for the fourth quarter of 1944 were 718,000 gallons, a decrease of 7.4 per cent as compared with the previous quarter. Total deliveries for the year also showed a slight drop below the 1943 figures, amounting to 3,163,000 gallons in 1944, or 2.7 per cent less than in 1943.

Discuss Dishwashing in PQ Organ

"Silicate P's & Q's," published by Philadelphia Quartz Co., Philadelphia, discusses the use of sodium metasilicate for washing glassware and dishes in restaurants, etc., in its February issue. "Dishwashing" the article declares, "cannot be done adequately in tepid water. Where equipment is such that the operator's hands must be in the water a temperature of 110° to 120° F. is right but higher temperatures are desirable for automatic equipment. Most experts recommend 140° F. as the desirable maximum to prevent coagulating . . ." The article then describes and illustrates the work of "Metso Granular," sodium metasilicate, in washing out a mayonnaise jar, as compared with using caustic soda. The restaurant problem of keeping silverware bright is also discussed, with suggestions as to most effective methods.

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NaOH IN DISSOLVED SOAP

(*From Page* 43)

as the sodium hydroxide concentration increases until a "salting out" effect gives a flocculent suspension.

Above a relatively low concentration of sodium hydroxide the conductance of the sodium hydroxide-soap mixture is less than that of sodium hydroxide alone at that concentration as shown in Figure 2. Aside from the mechanism suggested in Figure 1 this could be by sorption of sodium ions and hydroxyl ions on the soap micelle. The mechanism in Figure 1 of decreased ionization and increased micelle formation appears more probable at the lower concentrations of sodium hydroxide, followed by sorption at higher concentrations.

All soap builders hydrolyze in aqueous solution to give sodium and hydroxyl ions. Each of these will have its effect on the dissolved soap and the effects of builders can be qualitatively predicted in terms of the effects so produced.

References

1. James W. McBain and Kathleen Hay, J. Chem. Soc. 1929, 589-601.
2. Wm. C. Quick, J. Chem. Soc. *127*, 1401-11 (1925).
3. Foster Dee Snell, Ind. Eng. Chem. *24*, 76-80 (1932).
4. S. A. Johnstone and J. W. McBain, Proc. Roy. Aoc. A, *181*, 119 (1942).

Table 1. Specific conductances of various concentrations of sodium hydroxide and of similar concentrations of sodium hydroxide plus 0.1 per cent sodium oleate.

Concentration in wt. % of NaOH	L	L_{a+b}	$L_{a+b} - L_a$
2	11281	11167	—114
1.5	9898	9829	—69
1	6253	6197	—56
0.75	4107	4066	—41
0.5	3202	3185	—17
0.375	2458	2446	—12
0.25	1653	1651	—2
0.125	832	834	2
0.0625	415	420	5
0	0	33	33

L_a—Specific conductance of sodium hydroxide solution in Mho x 10^5.
L_{a+b}—Specific conductance of sodium hydroxide plus 0.1 per cent soap solution in mho x 10^5.
Temperature 40° C.

Antioxidants in Lard

Increase in the stability of lard by addition of tocopherol, was more than doubled when small amounts of synergists were also added. Deodorization of the lard prior to addition of the synergistic antioxidant produced even greater stability. Nordihydroguaiaretic acid was more effective than tocopherol as an antioxidant for lard. R. W. Riemenschneider, S. F. Herb, E. M. Hammaker, and F. E. Luddy. *Oil & Soap* 21, 307-9 (1944).

Soap from Synthetic Acids

Since soaps made from synthetic fatty acids are salted out only with difficulty, it is recommended that saponification be carried out by the half boiled process and about 1 per cent of salt be added at the start to prevent clot formation and rising. Such soap is mixed in a second kettle with other soap. When only one kettle and open steam are used, special precautions must be taken. B. Kinzl. Seifensieder-Ztg. 70, 69-71; through Chem. Abs.

New Water Softening Unit

A unit termed Filt-R-Stil, developed by the American Cyanamid & Chemical Corporation, is described as a heatless still for transforming ordinary tap water into the chemical equivalent of distilled water. Sizes range from a portable unit to large fixed industrial units. All sizes operate on the principle of ion exchange, utilizing synthetic resins of the melamine type as well as others.

Removing Difficult Stains

Soot stains on cloth, often a mixture of coal dust and other particles, are occasionally extremely difficult to remove. If oily, spotting with a solvent may help remove the stains. Further treatment is to rub the spot directly with a small stiff hand brush while applying soap and alkali. Wetting with kerosene containing 6 per cent of oleic acid is a good procedure before putting the garment through a washing formula.

For removing paint and varnish stains, mix 1 part of oleic acid with 2 parts of carbon tetrachloride and 2 parts of methanol or ethyl alcohol. Work this solution into the stain to soften it sufficiently so that it will be removed in the washing process.

Grease and oil stains may be removed with a mixture of 1 gallon of kerosene, 4 ounces of oleic acid and 4 ounces of benzol. A mixture of 1 part of oleic acid and 1 part of carbon tetrachloride will take out fresh marking ink. *The Laundryman*, November, 1944.

Hydrogenated Peanut Oil

A comparison of the density and viscosity of cottonseed oils and peanut oils shows striking similarities between oils of the same iodine value. This agreement is not surprising in view of the known likeness in the composition of these two oils. It emphasizes the fact that certain physical properties of a vegetable oil may be correctly inferred from the same properties of another vegetable oil of similar chemical characteristics. This should be of help in designing processing equipment for an oil which has not been thoroughly studied. F. C. Magne and H. Wakeham. *Oil & Soap* 21, 347-9 (1944).

Analysis of Filled Soap

Finely cut soap is extracted with alcohol in a Soxhlet apparatus so that only the soap is dissolved. After evaporation of the alcohol the residue is decomposed with hydrochloric acid and extracted with petroleum ether. S. Schutzer. Seifensieder-Ztg. 70, 88; through Chem. Abs.

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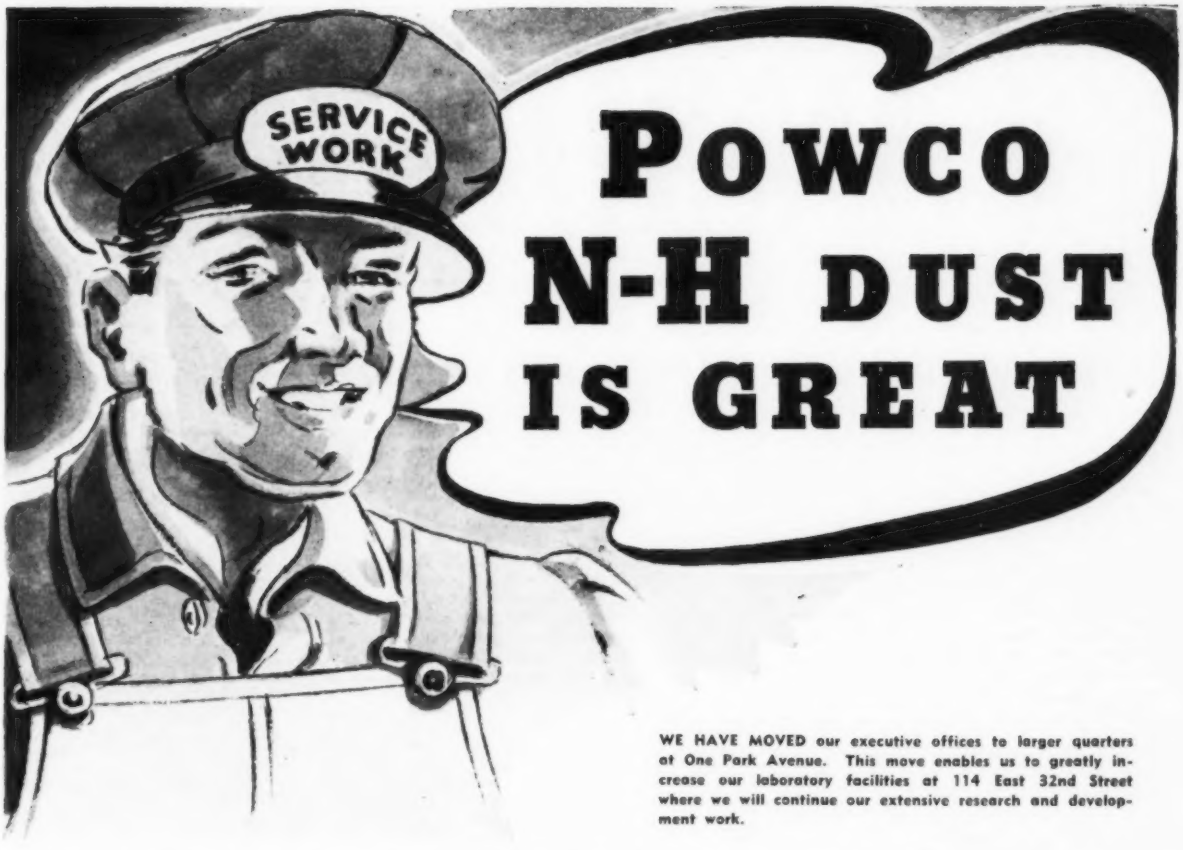

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Pyrethrum shortages were another challenge to the well-staffed, thoroughly-equipped Powell laboratories. We say "another" challenge, because Powell research men are always on the lookout for new developments in the pest control field.

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INSIDE NEWS

MARCH PREPARED BY NATIONAL CAN CORPORATION, NEW YORK, N. Y. 1945

Military Packaging Demands Intensify Tin Research

Global warfare on land, sea and air bombards tin cans and containers with new service demands, puts them through rougher handling than ever, subjects them to sudden temperature changes and climates ranging from arctic to tropic severity. Under circumstances often dramatic and always difficult, production of containers has made new developments and new characteristics "musts" in the overall pattern of victory.

In manufacturing and supplying our armed forces with cans and containers for food, equipment and combat weapons, National Can Corporation is contributing its share to fulfilling an important responsibility of industry. Here are only a few examples from National Can's first hand experience in connection with food protection.

Lifeboat Rations and Containers

Ration and water containers, for example, are made with protective linings for lifeboat and raft emergencies. They are so sealed as to be airtight and watertight. By construction, they are unusually sturdy to avoid breakage, leakage and contamination of contents. Cartons are buoyant to make beachhead landings easier and in order that water and food supplies can be thrown overboard from a sinking ship when survivors must subsist until rescue comes.

Containers for Special Foods

Specialties such as cheese, cheese spreads and date puddings are some of the innumerable items requiring vast quantities of suitable sanitary type, tightly-sealed, easy-opening containers for our fighters. Lend-lease food shipments also require similar type containers for packaging food products.

Containers for Food and Water

Sanitary containers for food packs are scientifically developed for shipments overseas. One illustration is a special outside camouflage coating which is applied to prevent base metal reflection in sunlight as well as to protect against atmospheric corrosion. Sealing is not only perfect but also practicable for transportation over thousands of miles.

As a result of all these diversified wartime container demands, work has been intensified in National Can's Research Department, and ceaseless experiments in the Corporation's laboratory are solving many special problems, and satisfying the ever-new and unprecedented packaging needs of our armed forces. These developments are sure to provide many permanent improvements in post-war product handling and packaging. 895

Infections Avoided for Fish Canners

Hands and arms of cannery workers handling fish or shellfish must be washed in dilute antiseptic solution immediately after work is completed if painful skin infections are to be avoided. These infections may arise not only from punctures or abrasions of the skin, but from accumulated particles of fish around the base of the nails, if these are not completely removed. When the infected condition is once established, considerable lost time may result. Established infections require medical attention. They do not respond to the sulfa drugs or to penicillin, being of a type distinctly different from infections resulting from the bacteria normally present on the human skin. 896

Vitamins in Walnuts

A native walnut in Russia has just been found to contain vitamin C (ascorbic acid) in concentrations 40 to 50 times that of lemons and oranges. Highest concentrations are in well developed ripe fruit. A simple extraction process is used, the liquid extract concentrated and used in this form in hospitals. 897

Vaccination for Young Peach Trees

p-Aminobenzenesulfanilamide, a sulfa drug, has been found to render young peach trees immune to X-disease. The disease first affects the leaves of the peach trees, causing them to become dry and brittle, and irregular patches of the blade to fall out. If the fruit does not fall, it ripens prematurely and has a bitter flavor. Since its discovery 11 years ago, X-disease has spread rapidly until today it appears throughout the northern states, seriously reducing production. Experimental results show that control as high as 100% is possible when injecting this drug into the trees. 898

Free Moisture

Moisture-testing of flour and other such materials will be quicker because of the ingenuity of a WFA worker. He has developed a method of using high-frequency electric energy in making the tests, which are required in enormous numbers in the course of government purchase of supplies. The equipment removes free moisture completely from the sample while leaving the other ingredients undamaged. 899

New Packing Procedure Chills Fish

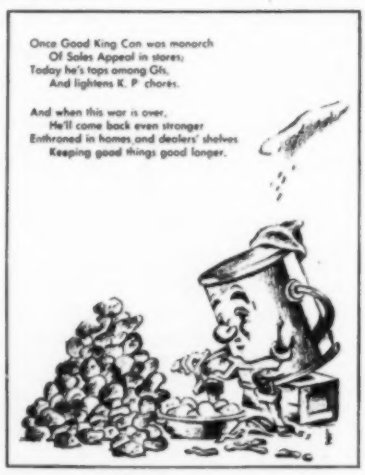
A new procedure now being tried out may prove of value to the entire fish processing industry. This new system would make for more regular hours in packing plants since catches could be held in tanks of chilled brine for some time after the fleet comes in without spoiling. Among the advantages of this brine-chilling procedure, besides stabilizing the amount of raw material for canning, are: chilled fish are easier to handle; fish are firmer, making removal of viscera less difficult; chilling in brine whitens the flesh of cut fish, giving a more attractive pack; and women packers can pack more chilled fish in the same length of time. 900

British Labeling

The provisions of the "Labelling of Food Order, 1944", issued in London, sound familiar to U. S. manufacturers. Name and address in the United Kingdom of the manufacturer or packer, or of the importer of pre-packed foods, is required, but a registered trade mark is recognized as a satisfactory substitute. The common names of the food ingredients must be listed, in the order of their proportions. Spices and flavorings can be merely named as such. Artificial coloring must be declared. The minimum quantity of food in the package must be stated. A regulation covering claims regarding vitamins and minerals has been included. 901

Cooling Cultures Silkworms

Culture of silkworms may now be profitable in Brazil through use of refrigeration. Under otherwise ideal conditions for mulberry trees, heat has been a limiting factor in cocoon formation. Now, with cooling, 10 crops a year are possible. 902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Returning Servicemen Expected to Influence Food Habits

Men returning from service may have a greater influence on food habits than is now expected. According to the Army's own survey of its men's postwar plans, something like one out of every 143 enlisted men (0.7 per cent) is planning to operate a food retailing business. Many of them already have capital and experience to invest. And all of them will be thoroughly aware of the advantages and disadvantages of processed foods. 903

Growing Beets Helped by Salt

Common table salt has now been found to cure deficiencies when growing beets. In fields where beets seem to "stand still" or where the leaves show purple spots and very dark foliage, side dressing the plants with a combination of salt and some nitrogenous fertilizer may bring prompt recovery and increased yields. Growers are urged, however, to use the salt on only part of each field, as tests have not covered a sufficient number of soil types to determine its effectiveness on all soils. 904

Rotproofing Wood

Rotproofing of wood by the use of surface coatings may prevent damage and sanitation problems around food plants. Preservation of the wood from attack by fungi, molds and bacteria depends not only on the toxicity of the coating but on its ability to adhere during service. A test for the efficiency of rotproofing treatments measures the effect of rotting on the tensile strength of specimens exposed under standard conditions. Loss of strength is more rapid and more nearly reproducible in wood exposed to rot-producing organisms than is loss of weight. Food processors contemplating rotproofing of their wood structures should be familiar with this test method. 905

Water Transformed

Water can now be transformed into the chemical equivalent of distilled water by a simple filtration process which is made available in portable and stationary equipment designed for all types of users. The principle involves filtration by skillful utilization of melanine-derivative and other resins. 906

Wood Resists Flame, Moisture and Warping

Methylolurea (from the combination of dimethylolurea with urea) has the characteristic of making ordinary wood flame-resistant, moisture-resistant, and warp-proof. Sticking doors, windows, and drawers are caused by swelling. Compressing the wood after treatment will completely avoid these inconveniences, although just applying the chemical will prevent jamming. 907

Technical Topics

IMPROVES STABILITY — Recently patented formulas improve the stability of polyvinyl alcohol glycerine combinations by the addition of formamide, acetamide or similar compounds. 908

VITAMINS—An advance in vitamin chemistry is the discovery of a method of making ferrihemochromogens soluble at physiological pH so they may be administered parenterally or by intestinal absorption. The substance is of value as an antidote for various forms of poisoning, and as a source of iron in cases of iron and vitamin B deficiency. 909

PEPPERMINT OIL — Experiments begun in 1937 by an agricultural experiment station reveal factors causing deterioration of peppermint oil in storage, and recommend best methods for overcoming the chemical and physical changes. 910

FILTER PAPER ADHESIVE—A satisfactory adhesive for sealing filter paper in a Buchner funnel for pressure filtration of viscous solutions of resin, with the aid of a pressure cooker, can be made by dissolving 20 grams of half-second nitrocellulose in a mixture of 40 grams of butyl acetate and 40 grams of xylene. 911

SEITZ FILTRATION — Bacteriological workers have reported an increase in pH resulting from Seitz filtration. Solutions normally handled through these filters, including beer, are of a type particularly sensitive to changes in pH, so that this tendency, if confirmed, must be taken into account whenever sterile filtration is used in processing or testing. 912

ALLY STARCH—Ally starch, a new resinous coating material that looks like varnish, withstands high temperature and action of most chemicals and solvents, and is made from sugar and starches. Freshly prepared, it is soluble in most paint and varnish solvents and can be applied to wood, paper or glass. 913

DISINFECTANTS PROTECT SWINE—Coal tar disinfectants are quite widely used by farmers for preventing and checking development of necrotic enteritis in swine. The disinfectant is fed in the slop, occasionally in soaked feed. The proportion commonly used is 1 teaspoonful to five gallons of slop for each twenty pigs weighing 50 pounds or over. 914

SOAPSTOCK—Favela oil, from species of Cnidoscolus native to northeastern Brazil, is suggested as a soapstock, its unsaponifiable portion being but 0.96 per cent. It does not easily become rancid, hence is suggested for food use. 915

NEW INSECTICIDE — "Ryanex," a new insecticide, is prepared from a tropical plant, ryania speciosa, which may be used either as a dust or a spray against the European corn borer, prevalent in New York and New Jersey. 916

SULFONATED SPLIT CASTOR OIL ACIDS — Sulfonated split castor oil acids, claimed to be as effective as Turkey red oil from whole castor oil, are made by esterifying, before sulfonation, the split acids with methanol or other monohydric aliphatic alcohol with not more than five carbon atoms. 917

INFRA-RED RADIATION FOR PAINT —Infra-red radiation is being rapidly developed as a means of quickly drying and baking paint, varnish, and lacquer films without damage to structure or appearance. 918

CONTAMINATED WATER RENDERED HARMLESS—Halazone tablets render contaminated water harmless. These tablets are a part of the soldier's or sailor's kit. 919

OIL FOR PAINT AND VARNISH — Milkweed seeds, now discarded after the floss has been utilized for life preservers, has been found to contain an oil useful in paint and varnish. 920

WATER-SOLUBLE PAINT STRIPPER —A water-soluble paint stripper has been developed which may be hosed on the surface to be treated. This leaves the surface ready for painting. 921

TURPENTINE AND ROSIN — A new process has been developed whereby turpentine and rosin are produced from crude gum as it comes from the trees. 922

Every effort will be made to furnish additional information on these articles. Where such information is not obtainable, we will refer inquiries to the original source of the article. Write to National Can Corporation, 110 East 42nd Street, New York City. Please mention the number at end of article—also name of the magazine you saw it in.

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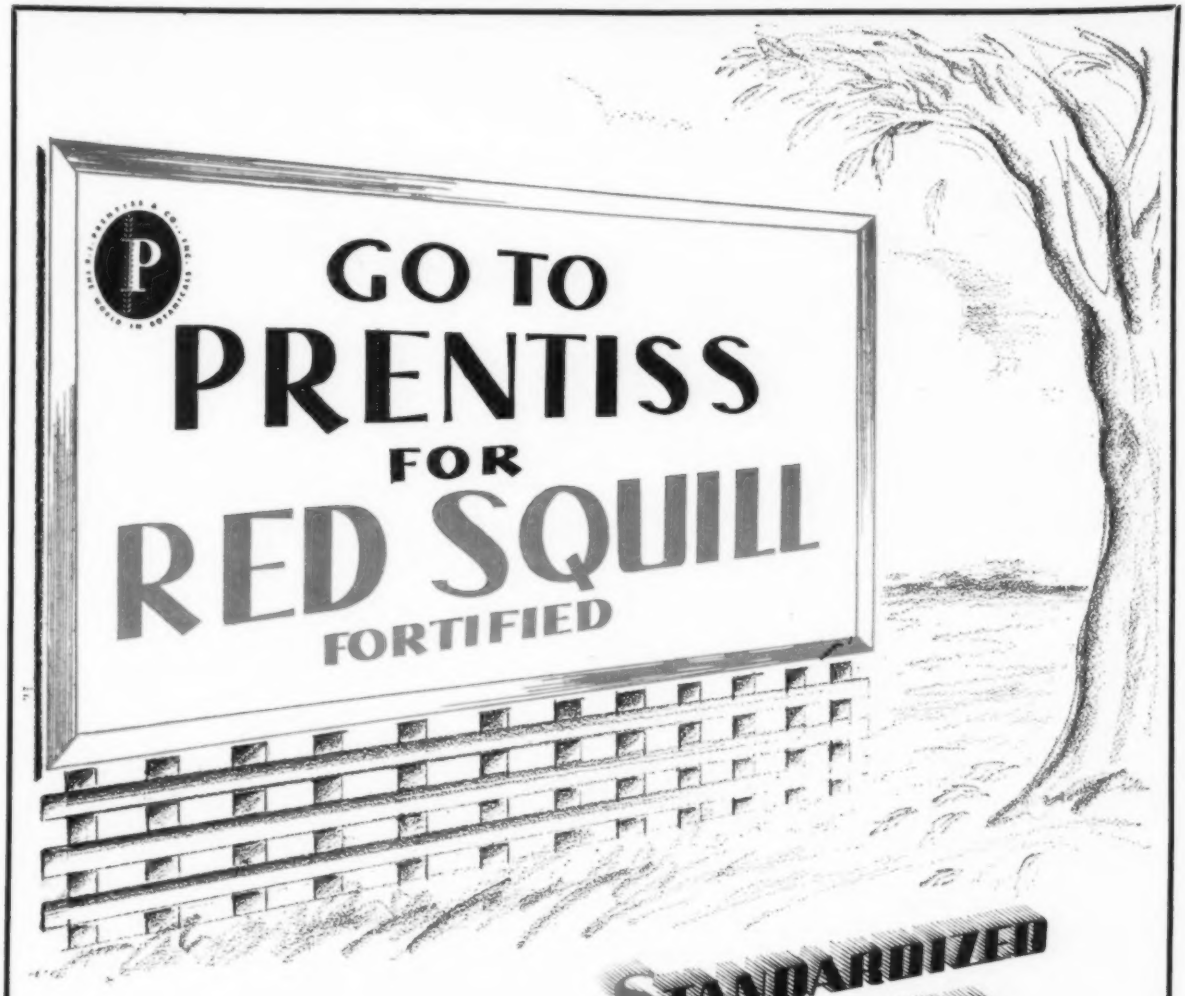

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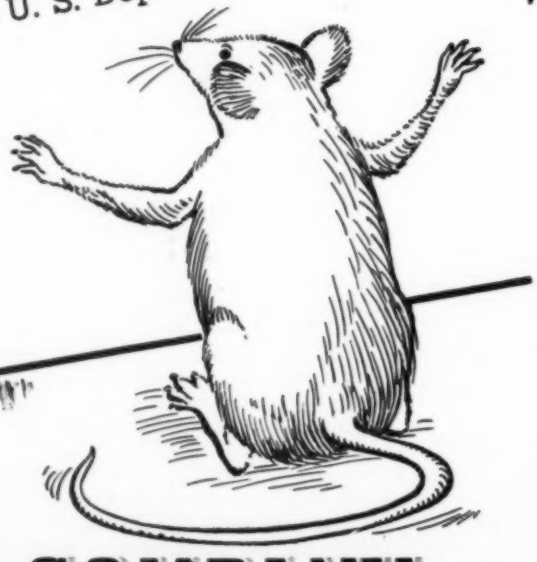

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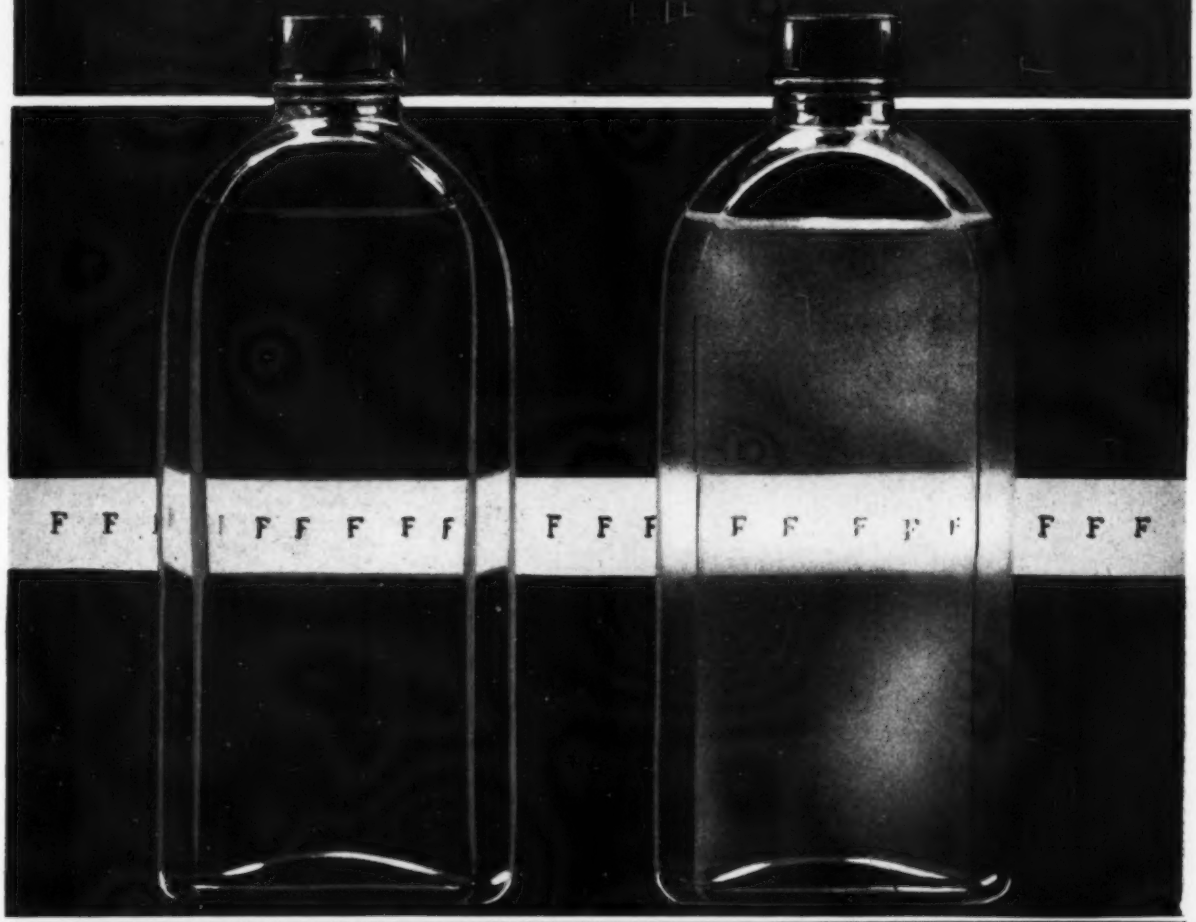

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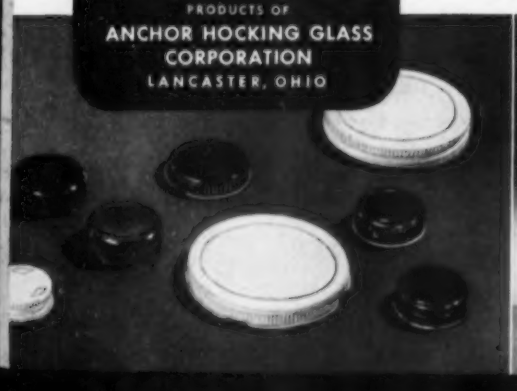

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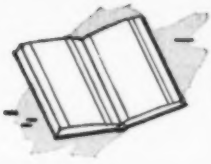

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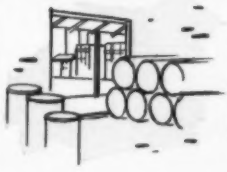

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A SECTION OF SOAP

Official Publication National Association of Insecticide & Disinfectant Manufacturers

IN the hope that some DDT may be available for the production of civilian products during the latter part of the year, some insecticide manufacturers are reported guiding their acquisition of raw materials with this in mind. Their hope appears to be based on the wide expansion in DDT production over the past year and the fact that about a dozen companies are now turning out this material. However, WPB does not share this hope, it would seem, and holds the view that the total production of DDT over the balance of the year will be required exclusively for military uses. The desire of the average insecticide manufacturer to "beat the gun" in marketing a new product containing the much-publicized DDT is quite understandable. Nevertheless, the chances in this direction during the balance of 1945, at least, appear rather slim. DDT is more freely available for research work, but for actual manufacture of civilian insecticides, the situation remains unchanged and is likely to remain so for some time.

EXCEPT in a few particulars, the pyrethrum outlook remains cloudy and unchanged. Although reports indicate that shipments of flowers from Kenya have increased very materially, the chances are that WPB will not release any high grade pyrethrum for civilian uses for some months to come. Reports indicate that any surplus material will be stock-piled in anticipation of a sudden expansion in demand for military uses in the Pacific. At the same time, pyrethrum processors in the United States are not showing a willingness to commit themselves on flowers as far ahead as heretofore owing to the present high price. They view accumulated stocks, in or outside of government hands, as potentially dangerous. But irrespective of the stock and import situation, pyrethrum, like DDT, will continue to be a military item for some time to come.

THUS far this year, forty insecticide and caustic poison control bills have been introduced into state legislatures, 1945 being a year in which most legislatures are in session. This new insecticide legislation, in itself, is not a good sign. With a new federal insecticide act under consideration in Washington to replace the Insecticide Act of 1910, the part of wisdom is to await the adoption of this latter act and to use it as a model for future state legislation. The benefits of such uniformity, as well as a background of experience in writing such a law, are apparent. Industry's complaint about state insecticide legislation has always been that for every well-written law, there are ten proposed laws poorly drawn and reflecting insufficient knowledge of the problem or its regulation. If all state insecticide legislation were held up this year pending developments in Washington, better legislation would eventually result.

INSECT REPELLENCY TESTING

The Testing of Fabrics and Papers for Attractiveness to Thysanura and Roaches Before and After Deterrent Applications

By Harvey Sweetman, C. L. Warner and B. J. Hershberg

Massachusetts State College

THE development of methods of testing fabrics and papers for their relative attractiveness to insect pests is in its infancy. Stiteler (1938) proposed a quantitative method for measuring the resistance of fabrics against insects by employing the weight of the frass of the larvae as a measure of the amount of fabric eaten. The larvae of the black carpet beetle, *Attagenus piceus* Oliv. were used in his tests.

The National Association of Insecticide and Disinfectant Manufacturers, the American Society for Testing Materials, and The American Association of Textile Chemists and Colorists jointly have improved and extended Stiteler's method for testing fabric deterrents (Anon. 1940a, 1940b; Fletcher and Kenaga, 1942a, 1942b). The extent of damage to fabrics and yarns in these tests was determined by three methods: visual examination, the weight of the frass, and the percentage of mortality of the larvae. The larvae of the black carpet beetle were used in these tests also.

Heal (1942) evaluated the resistance of fabrics to carpet beetle and clothes moth larvae by determining the loss in weight of the samples during the test. This method necessitates accurate control of temperature and moisture during the test or conditioning of the samples in a controlled humidity chamber for 12 to 24 hours before each weighing. The cooperative project of the associations mentioned above incorporated the proposal of Heal for weighing of samples in their standardized method (Fletcher, 1942). Fletcher (1943) has abandoned the weighing of frass as a method of measurement of the amount of damage, but has retained the visual method, loss in weight of the test samples due to feeding, and the percentage of mortality of the test insects as a part of the standardized test.

The method developed by the above workers was proposed for testing wool and similar fibers against carpet beetles and clothes moths. Such fibers are largely natural foods of these insects and are attractive to them. Wool fibers and yarns, which lack the finishes found on synthetic fabrics are not usually attacked by thysanurans, roaches, and insects with similar food habits. These insects are surface feeders and frequently damage to both papers and fabrics is confined to the surface until advanced damage occurs. These insects were not used in the tests of the above workers. Since the food habits and environmental needs of the thysanurans and roaches are quite different from those of the carpet beetles and clothes moths, the proposed procedure differs somewhat from the recommendations of Fletcher (1942, 1943).

Insects: Habits and Maintenance

There are four common species of thysanurans that infest buildings and damage fabrics and papers in this country. These are the silverfish, *Lepisma saccharina* L., the four-lined silverfish, *Ctenolepisma quadriseriata* Pack., the gray silverfish, *Ctenolepisma urbana* Sla., and the firebrat, *Thermobia domestica* Pack. (Sweetman, 1944). The common pest species of roaches include the American roach, *Periplaneta americana* L., Australian roach, *Periplaneta australasiae* F., oriental roach, *Blatta orientalis* L., German roach, *Blatella germanica* L., and the brown-banded roach, *Supella supellectilium* Serv.

The thysanurans and roaches seldom injure wool, hair, or cotton fibers (Tables 1-3; Figs. 2 & 7), but are very injurious to certain synthetic fibers (Tables 2 & 3; Figs. 1, 2 & 7) and to many types of papers (Table 5; Figs. 3 & 4). The synthetic fibers may be suitable food or the finishes which are added to these and other fibers may render them attractive to the insects (Tables 2-4; Figs. 1 & 2; Mantell & May, 1943). Austin and Richardson (1941) tested 18 samples of fabrics and fabric fibers and three samples of papers as suitable food for the firebrat. None of the materials used in their tests appeared to be adequate, but the average survival time was increased perceptibly over that of the controls with three fabrics and two papers. The firebrat and silverfish reproduced on a diet composed of synthetic fabrics, and the cast skins and dead specimens, although both of the latter were removed whenever noticed in the cages. Slabaugh (1940) has reported development of thysanurans on synthetic fibers also. Certain papers lacking finish, as paper towels are at-

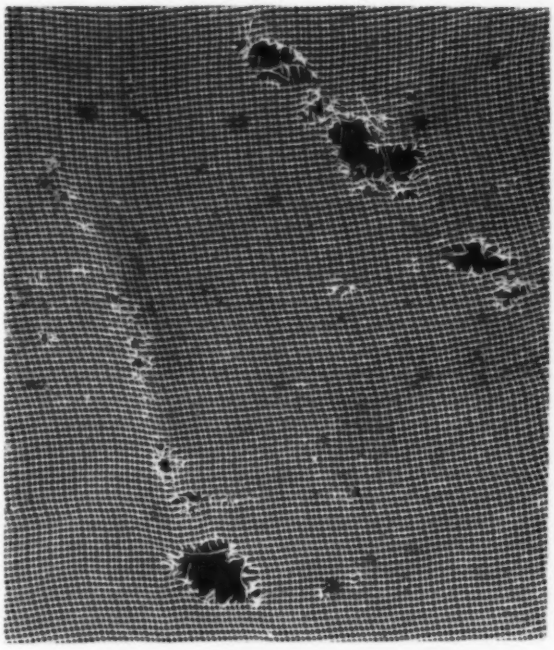

Figure 1. Damage produced by the American roach, Periplaneta americana, to a synthetic fabric.

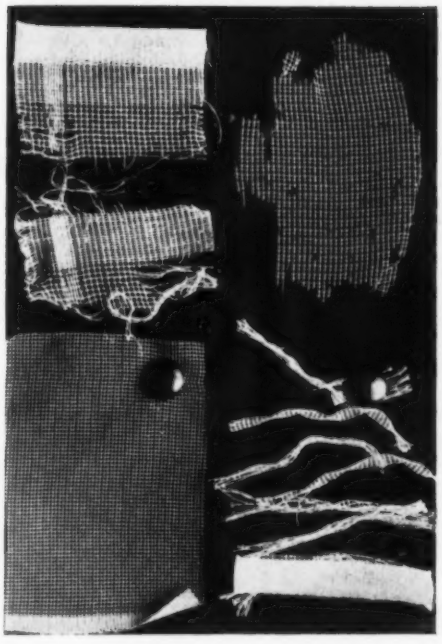

Figure 2. Damage produced by thysanurans to synthetic fabrics with different finishes. The undamaged sample has a urea-formaldehyde resin finish. Most of the cotton portions of two samples remain.

tacked by thysanurans and roaches, but papers with starch or certain protein finishes are frequently more attractive (Table 5; Figs. 3 & 4).

Three species each of thysanurans and roaches that are common pests of fabrics and papers have been used extensively in our tests. The gray silverfish has been used in a few tests and appears to have feeding habits similar to the four-lined silverfish, which generally feeds on a greater variety of fabrics and papers (Tables 2, 5-7) and more extensively than the other species (Tables 2, 4-7). This voracious feeding habit is just as evident in short duration tests (Table 6) as in the longer tests (Tables 2 & 7). The American, German, and brown-banded roaches were most often used in tests, but the latter is not as widely distributed as the other roaches. Since the different species of thysanurans and roaches show some variation in feeding response to various fabrics and papers, the response of one species cannot be accepted as a final criterion of possible damage by the other species.

While all of the thysanurans are carnivorous and readily feed on cast skins and dead insects, the firebrat is decidedly cannibalistic and when tested with cloth or paper that is unattractive as food, a number of the test insects may be injured or killed and eaten. The roaches exhibit similar habits and often feed on weak or dead specimens. The American roach is decidedly cannibalistic and in tests large individuals often kill and feed on small nymphs.

The firebrat (Sweetman, 1938) and silverfish (Sweetman, 1939) can be reared in great quantity if maintained at their optimum temperatures and relative humidities. The four-lined and gray silverfish develop and mature readily in culture, but these species have not been maintained successfully in the laboratory in abundance beyond the first generation (Sweetman, 1941). Direct sunlight should be avoided, primarily because of the heating and drying effect. Otherwise light intensity has little effect on development or tests. The roaches are readily reared in quantity if suitable physical conditions and an adequate diet are maintained (Campbell *et al*, 1941; Gould & Deay, 1940).

The firebrat is more readily collected than the other species. Where abundant a large culture can be obtained without difficulty by trapping (Sweetman, 1943). The common and four-lined silverfish are not trapped as readily, but where abundant, persistent collecting will yield sizable cultures. The four-lined silverfish has been most successfully collected on the outside of buildings and on porches at night during the summer months. Scattering of attractive food on the porch floor will attract large numbers from a heavily infested building. The insects can be scooped up with a thin filing card and jarred into a large dish or pan. The silverfish and four-lined silverfish can be collected in a like manner from the floor and walls on the inside of buildings or in basements where they are abundant. The stacking of several boards or similar material in a portion of the basement or building where thysanurans are observed, and the scattering of food on these will attract large numbers, which will remain hidden on the boards. These can be captured by jarring the boards over a large pan.

Wherever roaches are numerous, quantities can be collected. Tin cans or glass jars containing attractive food placed in corners of rooms,

Table 1. A comparison of the feeding response of the four-lined silverfish, *Ctenolepisma quadriseriata* to two unattractive synthetic fabrics and a 100 per cent wool fabric.

No. of insects	*Duration of test. Days*	*Type of fabric*	*Amount of damage*
		Fabrics only	
20	7	No. 1 synthetic	Slight
20	7	No. 2 synthetic	Slight
30	7	Wool	Trace
		Fabrics plus Haydak's food	
15	6	No. 1 synthetic	None
15	6	No. 2 synthetic	None
15	6	Wool	None

Table 2. The feeding response of the silverfish, *Lepisma saccharina*, the four-lined silverfish, *Ctenolepisma quadriseriata*, and the firebrat, *Thermobia domestica*, to various synthetic fabrics and finishes. u.f. refers to urea-formaldehyde.

Fabric No.	*Fabric Type*	*Fabric finish*	*Percentage of damage in 60 days* *Lepisma*	*Thermobia*	*Ctenolepisma*
1	Rayon	Resin & casein	40	95	98
1	Rayon	None	0	2	98
3	Rayon	u.f. resin & casein	0	2	98
6	Rayon	Arkwright u.f. resin	0	1	3
7	Cotton	Protein	0	0	1
7	Cotton	None	0	0	0
4	Cotton & rayon	Starch	0	0	0
			45	45	85
5	Cotton & rayon	Starch	80	55	85

Table 3. The feeding response of the four-lined silverfish, *Ctenolepisma quadriseriata*, to various synthetic fabrics and finishes. *Probably treated with urea-formaldehyde finish.

No.	*Fabric Type*	*Fabric finish*	*Damage in 8 days Percentage*
1	Cotton	Heberlein ($_2SO_4$)	0.09
2	Cotton	Permalon-celulose zincate	0.0
3	Cotton	Permalon-celulose zincate	0.0
4	Cotton	Cellulose zincate & ortho-phenyl-phenol (Dowicide)	T
5	Cotton	Wax emulsion & Dowicide	0.0
6	Aralac	None	T
7	Rayon & aralac	Tebilized-crease resistant*	0.0
8	Rayon & aralac	Tebilized-preshrunk*	0.0
9	Rayon & aralac	*	0.12
10	Rayon & aralac	*	0.09
11	Rayon & aralac	*	0.0
12	Rayon	Aspisett*	T
13	Vinyon	None	0.0

Table 4. The influence of washing of the feeding response of thysanurans to a curtain fabric reported to be resistant to silverfish.

Species of thysanuran	*No. of samples*	*No. damaged*	*Amount of damage Trace*	*Slight*	*Severe*
		Unwashed			
Silverfish	3	3	3	0	0
Four-lined silverfish	3	3	0	0	3
Firebrat	3	3	2	1	0
		Five Washings			
Silverfish	3	3	1	2	0
Four-lined silverfish	3	3	0	0	3
Firebrat	3	3	0	0	3
		Ten Washings			
Silverfish	3	2	1	1	0
Four-lined silverfish	3	3	0	2	1
Firebrat	3	3	0	2	1

Table 5. The relative attractiveness of various types of paper in the presence of suitable food to the silverfish, *Lepisma saccharina*, firebrat, *Thermobia domestica*, and the four-lined silverfish, *Ctenolepisma quadriseriata*. Two hundred insects were used in each test.

Description of paper	*Approximate percentage of damage Lepisma*	*Thermobia*	*Ctenolepisma*
Sized paper	90	100	100
Cellophane	100	90	90
Mimeograph	10	70	100
Black paper from photographic plates	0	70	10
Wall paper	30	50	90
Newspaper	10	0	0
Brown wrapping paper	0	0	0
Blue crepe paper	30	70	90

Table 6. The amount of damage produced by the silverfish, *Lepisma saccharina*, four-lined silverfish, *Ctenolepisma quadriseriata*, and the firebrat, *Thermobia domestica* during a six-day test period on an attractive and an unattractive sample of cloth.

Days	*Percentage of damage* *Lepisma Att.*	*Unatt.*	*Thermobia Att.*	*Unatt.*	*Ctenolepisma Att.*	*Unatt.*
1	0.22	0.0	0.12	0.0	1.4	0.0
2	0.26	0.0	1.28	0.0	10.0	0.0
3	0.70	0.0	2.50	0.0	...	T
4	1.90	0.0	4.30	0.0	26.1	..
5	...	..	...	..	...	0.03
6	4.20	0.0	7.10	0.0	33.0	0.06

Table 7. The comparative voraciousness of the silverfish, *Lepisma saccharina*, four-lined silverfish, *Ctenolepisma quadriseriata*, and the firebrat, *Thermobia domestica* during 20, 40, and 60 day test periods when offered fabrics that exhibit varying degrees of attractiveness.

Fabric No.	*Percentage of damage* *Lepisma Days* 20	40	60	*Thermobia Days* 20	40	60	*Ctenolepisma Days* 20	40	60
1	0	3	40	15	80	95	98	98	98
2	0	0	0	0.5	1	2	98	98	98
3	0	1	0	0	0	1	1	30	3
4	3	8	45	40	35	45	85	85	85
5	9	70	80	65	50	55	90	90	85
6	0	0	0	0	0	0	0	15	1
7	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0

Table 8. The relationship of size and age of the four-lined silverfish, *Ctenolepisma quadriseriata*, to the amount of food consumed. Only 50 per cent of these samples was attractive to the insects.

Days	*Percentage of surface damaged* 5-7 mm.	9-10 mm.	12-14 mm.
1	0.16	3.5	9.8
3	2.0	8.0	26.0
4	4.4	14.2	29.5
5	4.7	15.0	30.0
6	4.9	15.2	33.0

Figure 3. Damage produced by the American roach, Periplaneta americana, to loose-leaf notebook paper with finish.

Figure 4. Damage produced by the American roach, Periplaneta americana, to a magazine paper with finish.

shelves, or where the roaches congregate will attract large numbers. A little vaseline or similar material smeared near the top of the container on the inside, but not at the top, will permit entrance of the roaches but prevent most of them from escaping. The larger species are easier to retain in traps than the smaller roaches. Fruit jars with vaseline smeared on the inside of the curved portion of the neck are superior for the smaller species. Many still escape in certain environments, and other types of traps may be necessary. Fresh bread is an attractive bait, but other foods should be tried, since the available food supply will influence the response of roaches to the various baits.

If cultures of thysanurans are to be maintained for a few weeks or months only, whole wheat flour is an excellent food. The addition of powdered yeast and lean dried beef improves the diet. Fresh lean beef free of fat should be cut in thin slices and dried. Another satisfactory food is Haydak's. The addition of sufficient honey and glycerine, equal parts, to moisten the cereal mixture renders it suitable for roaches (Haydak, 1936).

Table 9. The influence of the presence or lack of attractive food on the attacks of the four-lined silverfish, *Ctenolepisma quadriseriata*, on replicates of various fabric samples.

Cloth only as food		*Cloth and Haydak's food*	
No. of replicates	*No. damaged in 8 days*	*No. of replicates*	*No. damaged in 8 days*
	Attractive cloth		
2	2	2	2
2	2	2	2
2	2	2	2
	Moderately attractive cloth		
2	2	2	0
2	2	2	0
2	2	2	0
	Unattractive cloth		
2	1	2	0
2	0	2	0
2	2	2	0

Testing Procedure

A practical test for determining the readiness with which thysanurans, roaches, and insects with similar food habits will feed on fabrics or papers should be one that will give an adequate answer in a short time with simple equipment under environmental requirements that can be easily established and maintained. The testing procedure should be such that the usual office or laboratory worker could conduct it, at least with the help and suggestions of an entomologist or other specialized worker.

The duration of a test can be reduced considerably by using larger numbers of the insects (Fig. 5). The use of 30 of the thysanurans should give a conclusive result in approximately a week. If smaller numbers are used the test should be continued for ten days or possibly two weeks. Large individuals consume greater amounts of test materials than smaller ones, but

(*Turn to Page* 127)

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and the packaging problem

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PETROLEUM OILS

used by Pest Control Operators

By George L. Hockenyos

Sentinel Laboratory

THE various types of petroleum oil products constitute important materials for the pest control operator. Unfortunately, there exists a great deal of confusion among pest control operators as to the properties of the many trade named products sold by the oil companies.

The committee on methods and standards of the National Pest Control Association recently sent a form letter to thirty-one of the major oil companies requesting them to list their products according to a chart provided for the purpose. A considerable number of the oil companies have responded by filling out the chart and a number sent specifications of their products. This report is based on the data so obtained from these oil companies.

Supplementing this report, we are also including a paper on "Specifications and Terminology of Base Oils Used for Bedbug Sprays" read before the 1944 meeting of the National Pest Control Association in Chicago.

The products discussed and charted here are listed in the order of increasing boiling range and fall into the following general types: Cleaners Naphtha, V.M.&P. Naphtha (varnish makers and painters naphtha), Stoddard Solvent, Kerosene (including base oils), Mineral Seal Oil and Fuel Oil or Furnace Oil.

From a study of the listing of their products and the specifications for the same, it soon became apparent that while the oil trade is fairly consistent in designating products from the kerosene to the fuel oil types, the products in the general class of naphthas are very much confused. This has made the proper listing of the products in the cleaners naphtha, Stoddard solvent and V.M.&P. naphtha groups very difficult. Fortunately only the higher boiling naphthas that approach kerosene are of any considerable importance to the pest control operator.

In the discussion of the types of oils there have been included a few typical specifications to show the range of properties within each type. It is hoped that nothing in this report will be construed as implying a recommendation of any particular company's product or products. The committee wishes to thank the oil companies who cooperated in making this report possible.

Specifications and Terminology of Base Oils For Bed Bug Sprays*

by B. L. Patton

Standard Oil Company (Indiana)

CRUDE oil is a dark colored liquid with an amazing variety of components, mostly hydrocarbons, i.e., combinations of the elements hydrogen and carbon, of many different degrees of volatility actually ranging from dissolved gases at one extreme to dissolved solids at the other extreme. The first step in oil refining, therefore, is to separate the crude oil into a number of related groups of stocks, each group of stocks possessing the same general characteristics, broadly speaking.

The simplified flow diagram (Figure 1) indicates how initial separation of the crude oil is accomplished by means of a still and a fractionating tower. Non-condensable and extremely light vapors pass clear through the fractionating tower to yield gases. Next in order of decreasing volatility come the gasoline and naphtha stocks, and after that the kerosene stocks, including the refined oil and base oil stocks in which we are interested. Then comes the somewhat less volatile fuel oil stock. After that the stock takes on the nature of lubricating oil and the part that is thus obtained by distillation (vaporizing and condensing) we call "distilled lube stock" to differentiate it from that heavier part remaining after distillation which we call "residual lube stock." To complete the picture, if the residual material contains asphaltic components, it may be withdrawn and processed to yield various forms of commercial asphalt. The residual material in other instances may be withdrawn and cooked to dryness, thus yielding petroleum coke. Note in passing that paraffin wax is characteristically derived from the distilled lube stock, and petrolatum, sometimes called "petroleum jelly," is derived from the residual lube stock.

A logical question after seeing that refined oil and base oil stocks are

* Paper read at the Annual Meeting of the National Pest Control Association, Hotel Sherman, Chicago, October 25, 1944.

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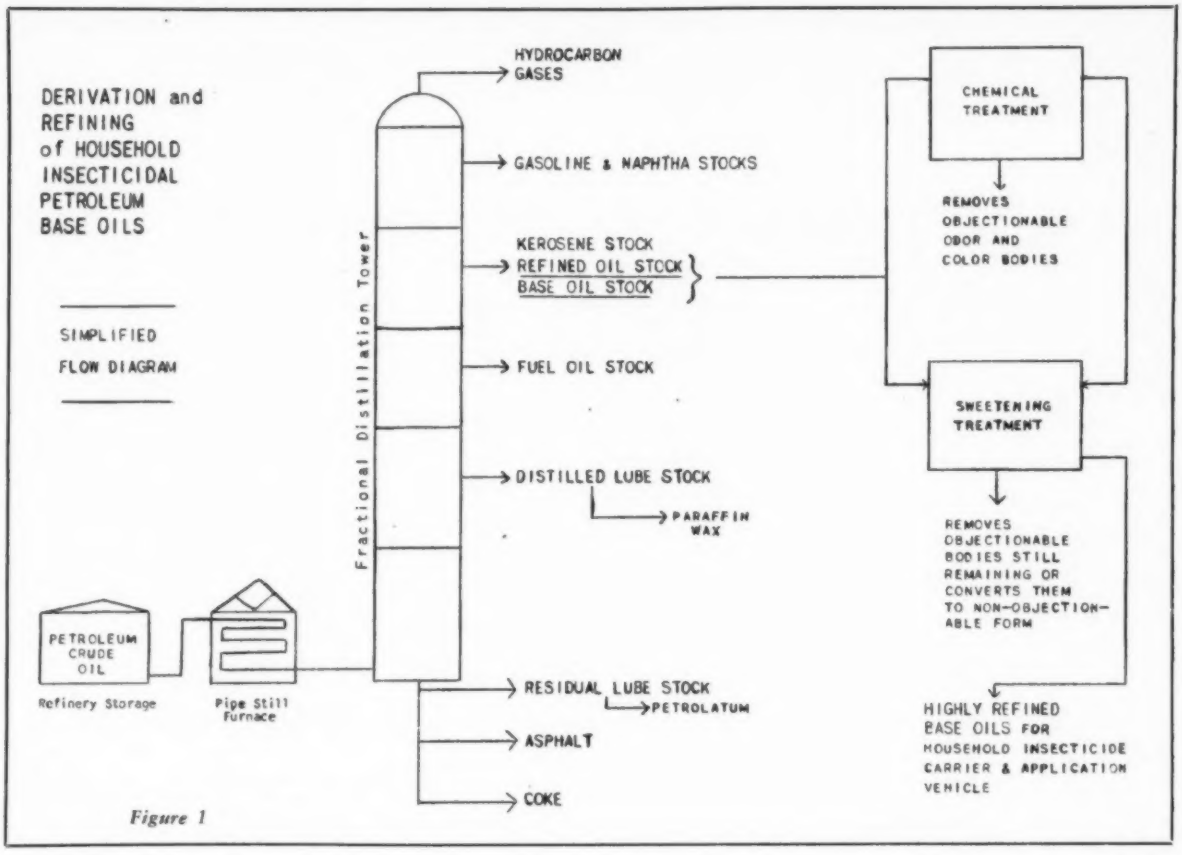

Figure 1

derived from the same general "cut" as kerosene might well be "What, then, is the difference between these stocks and kerosene?" The answer is twofold. First, while the volatility of each of the products in this group is, in general, similar, there may be small differences of particular importance. This would appear in slightly different ranges of boiling points. Right here is as good a place as any to explain what the oil man means by a range of boiling points.

Consider a mixture of two liquids of different volatility — the water and alcohol mixture used as an antifreeze solution in an automobile radiator. When heated, the alcohol in the mixture boils away first, then the water. Omitting technical details, this mixture may be said to have not a single boiling point, as does either the alcohol by itself or the water by itself, but instead it has a range of boiling points. Since most all commercial petroleum products resemble in this respect the crude oil from which they are derived, they characteristically consist of a mixture of a number of hydrocarbon components (called fractions by the oil man) of progressively differing boiling points. Hence, these products characteristically have not a single boiling point, but a range of boiling points.

Kerosene is made primarily to burn properly in wick type stoves and lamps. It is, in other words, a burner oil and the selection of its particular range of boiling points is made at this point in its refining with that purpose in mind. Base oils for liquid household-type insecticides are made primarily for that purpose, and the selection of their particular ranges of boiling points is made at this point in their refining with their own distinctive purposes in mind. If the ranges of boiling points happen to be almost similar, it is usually a coincidence. For one thing, the end point of the distillation range will, more often than not, be lower for the base oils to provide greater freedom from oiliness and staining tendencies. Other properties contributing to possible differences are determined chiefly by the subsequent steps in refining.

We now come to the second half of the twofold answer to the question about the differences between refined oil or base oil stocks and kerosene. As we have just said, it deals with refining. Both kerosene and base oil at this point customarily receive chemical treatment, a true refining process for purification purposes. The extent or degree of refinement will usually be much more drastic in the case of a base oil for insecticidal sprays, although many good kerosenes are also very highly refined.

How much and what kinds of refining treatment a refiner will use in any particular case is determined largely by the natural purity of the stocks being run and by his own facilities and preferences. Typically, a kerosene would receive treatment with sulfuric acid followed by neutralization, water washing, and sweetening (using sodium plumbite solution and flowers of sulfur). The first chemical treatment mentioned removes objectionable odor and color bodies and other impurities that in a kerosene would impair its burning qualities. The second chemical treatment described, called Doctor sweetening, removes any traces of the objectionable bodies still remaining after the first treatment or converts them into nonobjectionable forms. In certain instances, a kerosene stock may actually be of sufficient original purity to require only Doctor sweetening. That is why the flow diagram is drawn the way it is. A base oil for a household insecticide spray usually receives a fuming sulfuric acid treatment—in other words, a much more drastic acid treatment than kerosene. The entire chemical treating process is usually carried to much greater lengths and the result, in a typical case, is a more highly refined product than kerosene. No matter what chemical treating processes are used, no treating chemicals are ever permitted to remain in the finished product. Complete neutralization and thorough washing and drying after-

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wards, controlled by laboratory checks, make sure of that.

The end product of these distillation and refining processes is a highly refined base oil of the required high degree of purity and of the proper physical characteristics to serve as the carrier or application vehicle for liquid insecticides of the household type.

Now we are ready for another question: what are the purity and physical-characteristic requirements of base oils for bedbug sprays in terms of standards or descriptions that will make sense to formulator and user alike? As we deal with that question, I shall try to clear up the meaning of the terminology and the significance of the various tests that may be used, properly or improperly.

The first physical characteristic we shall consider is volatility. In a petroleum product, volatility is best described in terms of distillation range, A.S.T.M. method D86-40 or Federal Specifications VV-L-791b, Method 100.15. Most of the specifications currently in use prescribe a boiling point distillation range of from 350° F. to 530° F. The initial boiling point is set as a minimum to assure that the product will not be so light as to constitute a fire hazard. This hazard is further controlled by specifying a minimum flash point, A.S.T.M. Method D56-36 or Federal VV-L-791b, Method 110.12. The customary flash point minimum is 125° F. by the Tagliabue closed tester. Underwriters' Laboratories, Inc. rates a product of this character from 25 to 30, which is in a fire hazard class between paraffin oil and kerosene.

The end point or maximum boiling point of 530° F. in the distillation range is set as a maximum to assure a product which will be free of excess wetting or staining from oiliness and too low an evaporation rate. We shall have more to say about staining later. The range of boiling points specified also serves to control the viscosity or body of the base oil, which may be of significance from the standpoint of controlling the penetrative power of the base oil and a proper body for producing the desired oil mist. Certainly, as already suggested, the distillation range also serves to control the evaporation rate of the base oil, which is of importance from the standpoint of the eventual disappearance of the product after application. Complete evaporation within a reasonable length of time seems to be assured by the distillation range mentioned.

The next physical property we shall discuss is odor. As has been pointed out by many others, this is the one specification on insecticidal base oils that is the most open to controversy because there is no known method for measuring odor accurately and because the degree of odor is a matter of sensory opinion almost entirely. The problem is complicated by the characteristic volatility of satisfactory base oils. To call such products strictly odorless, even when they receive the very maximum of refining, is perhaps going too far, although they may be regarded by most observers as "free from kerosene odor and practically free from all odor"—which, incidentally, is the language of Federal Specification O-I-541 and also Federal Specification O-I-546. Other specifications may read: "no objectionable odor" or "practically free from all odor"—which probably is as far as one should try to go, adding, however, that "the extent of absence or character of odor should be agreed upon between buyer and seller." With this latter stipulation, the question of odor can be agreed upon between buyer and seller, and the seller will get what he wants without imposing a hardship of no practical value on the supplier.

One can temper his judgment on odor requirements by the knowledge that an odor acceptable to the trade is often added to the base oil in formulating the spray product. Of course, less essential oils are required to produce the desired aroma if the odor of the base oil itself is so slight as to be easily masked, and that means a saving in costs. It is interesting to recall, however, that even bedbug sprays having the strong odor of phenol are generally much improved with respect to leaving a so-called kerosene odor after the phenol has disappeared by the substitution of one of the new base oils instead of regular kerosene.

Now we come to another physical property, that of staining. It is important, of course, that the oil base itself be light in color, clear, and free from suspended matter in order to have a minimum staining effect on fabrics, wallpaper, and general household furnishings. From the standpoint of color, a water white product is usually what is required of the base oil before the addition of the toxic ingredients or any other materials. Water white can be taken to mean at least a color of plus 21 on the Saybolt Chronometer. A minimum Saybolt color of plus 21 has been found in practice to be quite satisfactory. The most rigorous requirements can usually be met by a minimum Saybolt color of plus 25. Strictly from a color standpoint, there is no justification for going any higher than this. Sometimes a color as high as plus 30 is proposed, not so much from the nonstaining aspect as from the aspect of controlling odor or of controlling excessively heavy ends, or of controlling the degree of refinement, but since these latter characteristics are covered specifically by other specifications, there is no necessity for using a color specification this way and thereby imposing an unwarranted hardship on the supplier. Whether or not a product is clear and free of unsuspended matter can be determined readily by ordinary examination of a sample in a clear glass receptacle.

A great amount of study has been made by many investigators to determine the staining characteristics of liquid sprays and the base oils themselves, particularly on wallpaper. You know what a problem this is likely to be. But when all is said and done, any of the petroleum base oils of the high quality, so-called "nonstaining" characteristics described by the foregoing specifications will have practically the same characteristics in this respect—none will be found with any advantage over another, and no nonpetroleum solvent will be found that offers any advantage over petroleum base oils. The reason for this lies in other factors which are present.

It is now recognized that when a spray application results in any flow of liquid on a wallpaper surface, stain lines may be produced regardless of the nonstaining quality of the carrier being used, and the effect usually is only slightly greater after the addition of the toxic agents to the base. Even if there is no dirt or dust present on the wallpaper surface to be washed away by the liquid, the binder or the pigment particles of the wallpaper may wash out and deposit at the outer edges, which dry first, and thus form a stain line. While all wallpapers react this way under certain conditions, the stain intensity seems to be highest with starch type wallpapers; next highest with the protein type; and least with the rotogravure ink type. Moreover, with wallpaper that is moist or damp, as when rooms are newly decorated, the staining effect will be more pronounced.

From the standpoint of making sure in every way possible that there will be no detrimental action upon metal objects coming in contact with the spray or upon the metal of the container or spray equipment, it may be desirable at least theoretically to specify that the base oil have a neutral reaction to phenolthalein and also to methyl orange when shaken with water. Such a test is probably more significant than a test for reaction of the residue after distillation since it is the reaction of the oil itself that is really pertinent.

Other physical and chemical tests may sometimes be proposed but our experience shows that they are really not necessary. Some petroleum specifications of a manufacturing derivation include gravity. Specific gravity, however, either as such or converted to A.P.I. gravity (American Petroleum Institute) is not used by spray formulators; hence is a needless complication that can be dispensed with. Neither is there any need to include a pour or cold test specification, because the spray is seldom if ever used under low temperature conditions that would make it necessary.

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A fire point is sometimes mentioned in connection with flash point, but such a specification is unnecessary because it tells nothing that the flash point does not tell. There is, in other words, close correlation between the two, the fire point exceeding the flash point by a uniform amount for similar classes of products and for particular types of test instruments. Nor is there any need to cover toxicity in a specification for a product of this type since the user does not depend on the toxic action of the oil base itself, but adds special toxic agents to provide the necessary lethal characteristics.

Several years ago it was proposed that the most rigorous standards on a so-called odorless type base oil might include what is termed as unsulfonated residue test using fuming sulfuric acid of specified concentration. The test, also known as the UR test, was never adopted officially for base oils of the type we are concerned with here because of lack of agreement on the necessity for the test, lack of correlation with performance, and lack of standardized procedures for products of this type. The opinion was expressed by many of the experts involved that, after all, the real criterion of odor is the human sense of smell; hence, with an agreement on odor between buyer and seller, no necessity for an unsulfonated residue test as a measure of odor would exist. If a sufficiently odorless oil can be attained (as is the case) without requiring that the oil pass a drastic, hard-to-correlate, and difficult-to-run sulfuric acid absorption test, we believe that such a hardship should not be imposed upon the oil manufacturer.

It is questionable if any more extensive specifications than those I have commented upon favorably here are really necessary, since such satisfactory materials have in general been provided by these specifications so far.

Oil Types Used in Pest Control Work

Cleaners Naphtha

This is a volatile fraction of the petroleum oil frequently referred to as Dry Cleaners Naphtha or Benzine. This last term should not be confused with Benzene which is a coal tar chemical also used as a solvent. The products described in the table immediately below are typical of this type. They are as given by the manufacturer.

Cleaners naphthas have flash points too low to be used in most phases of pest control work. Both NAIDM and NPCA specifications for spray bases call for a minimum flash point of 125 deg.F. when measured by the Tagliabue closed cup method.

Both of the companies whose products are described below make higher boiling naphthas, some of which may be useful in pest control work. Because they are composed of the lower hydrocarbons, the naphthas in this class are excellent solvents for many insecticides and of course they dry rapidly. They may be used for cleaning brushes, removing stains and mixing chemicals but not as insect spray bases except possibly under very unusual circumstances.

Cleaners Naphtha

	Anderson-Prichard	*Standard of Indiana*
	APCO THINNER	STANOLIND CLEANERS NAPHTHA
Color	water white	Saybolt 30 (water white)
Odor	mild non residual	good
Initial boiling point	240/248 F.	205 F.
50% boiling point	256/266 F.	224 F.
Final boiling point	284/294 F.	324 F.
Flash Point T.C.C.	52 F.	—

Varnish Makers and Painters (V. M. & P. Naphtha)

Products in this class of the naphtha type are in general higher boiling and have higher flash points than cleaners naphtha. So great is the variation in the classification of the naphthas however that some of the oil companies list their lower boiling and lower flash naphthas as V.M.&P. and their higher boiling and higher flash naphthas as cleaners naphtha. The uses and limitations are similar to those given for cleaners naphtha.

Stoddard Solvent

Products in this class are often referred to as high boiling naphthas or as mineral spirits. The Stoddard solvent group is generally accepted as representing the naphthas that come nearest to the kerosenes in boiling range. Typical specifications are shown in the table at the bottom of the page.

Many of the oils used as bedbug spray bases fall in the general class called Stoddard solvents, these solvents being given preference over the slower drying kerosene fraction. There is an advantage in a quick drying product in that wallpaper, etc., does not look wet for so long a time and mattresses dry out more quickly so that there is less danger of spray burn by the occupants. Some operators prefer the slower drying bases on the ground they believe there is a residual effect from sprays that do not dry out before night. The vapor of quick drying oils such as Stoddard solvent may have more tendency to cause headaches in Winter when windows are not apt to be opened during the drying period. The oil vapors may be classed as non-toxic by the manufacturers, but the fact remains that there are complaints of headaches and other disturbances from breathing the vapor of volatile oil bases.

Stoddard Solvent

	Anderson-Prichard Co.	*American Mineral Spirits Co.*	*Standard Oil of Indiana*
	APCO 140	AMSCO Stoddard Solvent	STANISOL
Color	water white	Better than water white	Saybolt 30 (water white)
Odor	mild non-residual	good odored	good
Initial B.P.	358/368 F.	meets Fed. Com. Std. 3-40.	311 F.
50% B.P.	373/384 F.	340 F.	342 F.
Final B.P.	398/412 F.	400 F.	390 F.
Flash Tag.C.C.	140 F.	104 F.	103 F.

SOAP, sanitary chemicals, cosmetic and pharmaceutical manufacturers whose products or manufacturing processes involve the use of *Interface Modifying Agents* for wetting, adsorbing, spreading, dispersing, emulsifying, de-emulsifying, peptising, penetrating, foaming, washing, sanitizing, bodying, solubilizing, deflocculating, defoaming, sudsing or cleansing. . . .

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METAL POLISH	SPECIAL CLEANERS
SILVER POLISH	GYM CLEANER

Kerosene Type Oils

	L. Sonneborn Sons, Inc.	*Atlantic Refining Co.*	*Anderson-Prichard Co.*	*Standard of Indiana*		
	DEO-BASE	ULTRASENE	APCO 467	PERFECTION	#9	#10
Color	Say.30 plus	colorless	deodorized water white	Kerosene Say.25	Say.24	Say.30
Odor	pract. none	no kerosene odor	neutral	good	good	good
Initial B.P.	370/400 F.	390 F.	424 F.	351 F.	362 F.	378 F.
50% point		—	442 F.	427 F.	419 F.	421 F.
End point	480/510 F.	490 F.	480 F.	507 F.	490 F.	484 F.
Flash Tag.C.C.	170/180 F.	160 F.	186 F.	148 F.	154 F.	160 F.

The cause may be imaginary but the complaints are nonetheless real.

Since the flash point is set at a minimum of 125 deg.F. for oil bases to be used in spray work, the minimum boiling range that will give this flash point will be the quickest drying oil. The end point is of course the most important and the 50 per cent point the next most important in judging the speed of drying of an oil.

Oils of this type are much used in moth spray work as well as in bed-bug control and often times in formulating fly sprays. Fly sprays made from quick drying oils are often desired in restaurants where it is possible to spray close to meal times if a quick drying spray is used. For most fly spray work the highly refined kerosene fractions are more generally used.

Kerosene Type

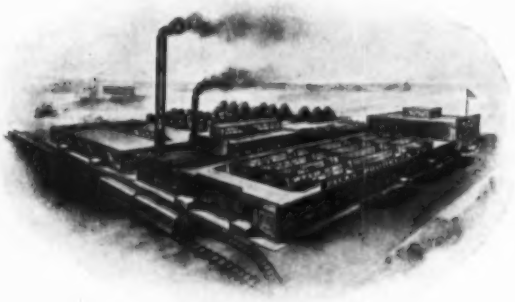
Regular Kerosene and Refined Base Oil

This is the most familiar and widely used fraction of the oils used in pest control work. It is also the most consistent type so far as manufacturers specifications are concerned. The chief differences in properties are due largely to degree of refinement to remove color, odor and tendency to stain. Thus Standard Oil of Indiana and the L. Sonneborn Sons each make three oils of this type differing chiefly in the degree of refinement. The three products of the Standard Oil Co. are listed side by side in the table of specifications for easy comparison.

(*Turn to Page* 141)

TRADE NAME CHART (Incomplete due to lack of response from many oil companies)

Producer or distributor	*Cleaners Naptha*	*V. M. & P. Naptha*	*Stoddard Solvent*	*Kerosene Regular*	*Kerosene Refined*	*Mineral Seal Oil*	*Furnace or Fuel Oil*
Standard of Indiana	Stanolind cleaners naphtha	V. M. & P. naphtha	Stanisol	Perfection kerosene	#9 & #10 base oils	Mineral seal oil	Standard heater oil
Standard of California	Standard cleaners naphtha	Standard thinner #300	Standard Stoddard solvent	Standard base oil B.	Standard base oil C.	Standard mineral seal oil	Standard stove oil & furnace oils #2, 3
Gulf Oil Co.	Gulf Stoddard solvent	Gulf V. M. & P. naphtha	Gulf Stoddard solvent	Gulf kerosene		Mineral seal oil	fuel oils #1, 2, 3
Esso Marketers		Esso V. M. & P. Naphtha	Varsol	Esso kerosene	Bayol-D	Mentor 28, 29, 30 & 31	Essoheat light & medium
Commerce Petroleum Co.					Dispersol		
Atlantic Refining Co.			#52 Stoddard solvent		Ultrasene		Atlantic furnace oil med.
Anderson-Prichard Co.	Dryolene Apcothinner	Dryolene Apcothinner	Stod-sol #10 mineral spirits Apco 125 Apco 140	A-P kerosene	Apco 467 Apco 467 deodorized		
Pennsylvania Refining Co.					Insecti-sol		
American Mineral Spirits Co.	Amsco special naphtholite	Amsco naphtholite Amsco mineral spirits	Amsco retardsol Amsco Stoddard solvent				
Skelly Oil Co.		Skellysole 'V' Skellysolve dry cleaner	Skellysolve "S" Skelly cleaners naphtha	Skelly kerosene			furnace oil 1 & 2
Deep Rock Oil Co.	Kleeners Naphtha	Deep Rock V. M. & P. naphtha	Deep Rock Stoddard solvent	Deep Rock kerosene		Deep Rock mineral seal oil	Deep Rock range oil Deep Rock domestic heating oil



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DDT-Thanite Sprays for Mosquitoes

By

Paul L. Rice, Carl B. Huffaker and Richard C. Back [1]

Delaware Agricultural Experiment Station

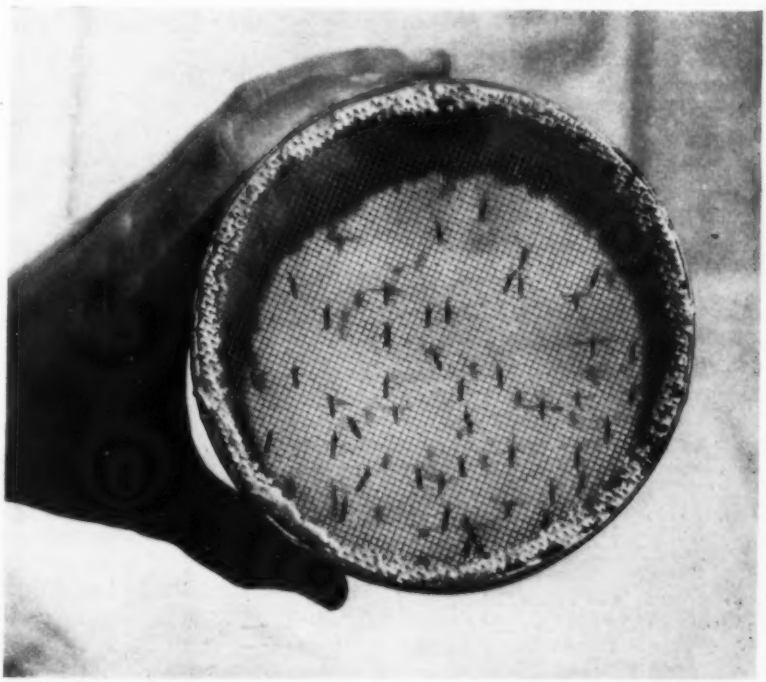
THE urgent need for large quantities of insecticides for use against adult mosquitoes and the current shortage of pyrethrum, which is commonly employed for this purpose, has stimulated search for pyrethrum substitutes. The Entomology Department of the Delaware Agricultural Experiment Station, through a commercial fellowship, has been engaged in research on fly sprays for a number of years. The development of a satisfactory activator for pyrethrum and the establishment of the high effectiveness of *Thanite*,[2] a terpene thiocyano ester, when used against houseflies, have been among the accomplishments of these investigations. When the need for mosquito sprays became urgent, through the present war emergency, the testing of *Thanite* against mosquitoes was undertaken. It was found, immediately, that *Thanite* and pyrethrum sprays which were toxic to houseflies were, in general, more toxic to mosquitoes. However, when reduced concentrations of these two materials were used, in order to set up more critical comparisons, the greater susceptibility of mosquitoes to pyrethrum was evident. Although the mortality resulting from these reduced concentrations of *Thanite* was low, the paralysis, or "knockdown," was satisfactory.

When dichloro-diphenyl-trichloroethane (hereafter referred to as DDT) became available for experimental use, plans were made to test this material, both alone and in combination with *Thanite*, against the adults of the malaria mosquito, *Anopheles quadrimaculatus* Say.

Methods—Laboratory tests were conducted in a standard Peet-Grady chamber. Adults of *A. quadrimaculatus* (largely females) were collected in the field at resting sites in an area of concentrated breeding, and lots of from 50 to 100 were liberated in the test chamber. Doses of 6 ml. of the toxicants were atomized into the chamber, and the insects exposed for 2½ minutes. Both dosage and exposure period were reduced from those of the standard Peet-Grady method in order to approximate more closely conditions which would be commonly encountered in the field. Records on the extent of paralysis and 24-hour mortality were kept.

Field tests were conducted in a cattle shed which was open on one side. Early experiments indicated the advisability of evaluating the results on caged rather than free mosquitoes to insure greater accuracy. Test cages were made from cylindrical tin cans, 3½ inches high and 5 inches in diameter, by replacing the tops and bottoms with screen (see Figure 1). About 50 adults of *A. quadrimaculatus* were placed in each cage. The three cages for an individual test were hung on the wall of the shed, as shown in Figure 2, and the test insecticide was

Figure 1—Cage used in conducting insecticide tests against mosquito adults.



[1] Associate Entomologist, Former Research Fellow, and former Assistant Research Fellow, respectively. Study financed by Purnell funds designated for Mosquito Investigations, and results published with the approval of the Director of the Delaware Station as Publication 194 and Scientific Article 120 of the Department of Entomology.

[2] Reg. U. S. Pat. Office, by Hercules Powder Company.

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Figure 2—Method of applying experimental sprays to wall area from which cages containing mosquitoes are suspended.

discharged toward the wall through a DeVilbiss Special No. 5004 atomizer (no attempt being made to concentrate on the cages) under a pressure of 20 pounds. The atomizer was held about three or four feet from the wall, the distance being adjusted somewhat with different wind conditions. The wall space on which the cages were placed was 48 square feet in area. This was covered with the spray in 12 seconds, 6.5 ml. of material being discharged during this time. The cages were removed from the wall and were aired rapidly 30 seconds after spraying commenced, and the per cent of "knockdown" was estimated five minutes after exposure. Mortality counts were made at the end of 24 hours.

Results and discussion—The results of laboratory tests with DDT alone and in combination with *Thanite*, and with Pyrethrum are presented in Table 1.

It will be seen from Table 1 that a kill of 100 per cent was obtained when a spray containing 1 per cent DDT was used. This kill was slightly reduced when either 80 per cent or 60 per cent of the DDT was replaced by *Thanite*, but these combinations produced far more complete paralysis than the 1 per cent DDT. The 20-80 combination of DDT-*Thanite* gave a paralysis of 92 per cent, which was only slightly below that of pyrethrum, and gave a high kill of 96 per cent. The kills of all four of the sprays tested were excellent. Since DDT produces such slow paralysis, it seems that combinations of this material with one of high "knockdown" power, such as *Thanite*, should ultimately be given consideration in order to produce a spray material which will cause an immediate observable effect on the mosquitoes and, hence, will be more readily accepted by the general public. Concerning this point, Dr. Victor Froelicher, a representative of the Geigy Company, holder of the patent rights on DDT, has written in part as follows (1944):

> "We must keep in mind the main characteristics of 'DDT' in fly sprays, namely: slow knockdown and sure kill. It therefore seems obvious that although it may make an AA fly spray, it does not replace pyrethrum nor thiocyanate, but complements these products. A combination spray seems to give us the ideal fly spray of the future."
>
> ". . . 'DDT' does not have sufficient dramatic knockdown for a household spray although it may show an AA rating. It is therefore desirable to combine 'DDT' with pyrethrum or thiocyanate which will not only result in a considerable saving but also in a superior fly spray."

A second series of tests including but two replications was completed, in which all of the materials listed in Table 1 were used at concentrations of 0.5 per cent. In general, excellent kills were obtained with all of these, indicating that the breaking point in effectiveness has not yet been reached at 0.5 per cent concentration.

The high toxicity of DDT to *A. quadrimaculatus* adults having been established in laboratory tests, it seemed desirable to make further observations under partially exposed conditions similar to those in which the sprays would often have to be used. Because of the poor paralysis produced by DDT alone, tests were confined to combinations of

(*Turn to Page* 146)

Table 1. Comparative toxicities of pyrethrum, DDT, and combinations of DDT and *Thanite* when used in a Peet-Grady chamber against adults of *Anopheles quadrimaculatus*.[1]

Material[2]	*Paralysis after 2½-minute exposure*		*Dead and moribund 24 hours after exposure*[3]	
	Observed average in per cent	*Average angle of transformation*	*Observed average in per cent*	*Average angle of transformation*
1% Pyrethrol "20"	97	81.8	94	76.3
1% DDT	57	48.7	100	90.0
1% of a combination of 20% DDT and 80% *Thanite*	92	74.1	96	79.9
1% of a combination of 40% DDT and 60% *Thanite*	86	69.1	99	85.5
Least mean difference needed for significance		10.3[4]		6.7[4]

[1] The percentages listed in the table represent averages of four replications; from about 50 to 100 mosquitoes were used in each replicate.
[2] All toxicants were in solution in deodorized kerosene.
[3] A physical injury check in which one lot of mosquitoes was handled as the others under test but was not sprayed showed a 24-hour mortality of 4 per cent.
[4] The "F" test of analysis of variance indicates high significance.

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TECHNICAL Briefs

From Current Literature in the Sanitary Products Field

Household Fumigation

Trichloroacetonitrile and a 1:1 mixture of trichloroacetonitrile and acrylonitrile may be used for controlling household insects. These fumigants are colorless liquids, volatile at room temperature and highly toxic to insects. They are more effective at 26.7° C. than at 15.6° C. When used in a moist atmosphere, the necessary period of aeration is prolonged. If the moisture content of furnishings increases 1-2 days after fumigation, irritation of the eyes of the occupants may result.

Trichloroacetonitrile in practical tests gave good penetration and rapid elimination from fumigated houses. Its lachrymating properties preclude danger of poisoning of the occupants, but gas masks should be used by the operators. In tight buildings 2 pounds of trichloroacetonitrile per 1000 cubic feet for six hours or 1.5 pounds for 12 hours, should be adequate for clothes moths and carpet beetles. The trichloroacetonitrile-acrylonitrile mixture requires slightly higher dosages or longer exposures, and is used according to the same routine and precautions. E. H. Glass. *J. Econ. Entomol.* 37, 74-8 (1944).

Cationic Germicides

When cationic agents are adsorbed upon bacteria, they exert an inhibitory effect on the metabolism and viability of the organisms. Since they are highly surface active, they disturb the functioning of the surface membrane. Recent studies indicate that bacteria function somewhat analogously to the base-exchange substances like Permutit and other zeolites. Experience has shown that the cationic agents cannot be utilized by the oral or parenteral route. A. Taub. *Merck Rept.* 53, No. 3, 28-31 (1944).

New German Louse Product

A chlorine-hydrocarbon mixture with the addition of pyrethrum is reported being marketed in Germany under the name "Lausex" for louse control. It is described as a brown, oily-feeling liquid. As a result of its high wetting power it spreads immediately on the skin or other surface. The preparation does not irritate the skin but rather has a mildly soothing effect on irritated areas. The odor is not objectionable. "Lausex" is said to act as a contact and respiratory poison and to be very effective against lice. F. Zumpt. Desinfekt. u. Schadlingsbekampf. 35, 7-8; through Chem. Abs.

Insect Repellent

Cyclohexyl 2-ethyl hexoate may be used admixed with 3-10 times as much vehicle such as an oil or alcohol, on the human skin or on animals as an insect repellent. L. W. Wasum, to Kessler Chem. Co. U. S. Patent No. 2,352,746.

Activators in Fly Sprays

Activators in fly sprays delay the occurrence of knockdown and so prolong the period of flight through the mist. As the activator content is increased, within limits there is a progressive increase in the percentage of kill. Data on isobutyl undecylenamide and other adjuvants illustrate the action. W. A. L. David and P. Bracey. Nature 153, 594-5 (1944).

DDT in Paints

In laboratory experiments with insecticidal paints, plywood was cut to fit inside zinc mesh fly cages. The first cage had plywood painted with DDT (5 per cent) paint, covering the floor, half way up the sides, and two-thirds of the lid. The second cage was covered with an identical area of plywood painted with the same paint in which DDT had not been incorporated. The results showed that the oil-bound water paint incorporating DDT was effective against houseflies, and that after two months the paint had not lost its insecticidal properties.

Small rooms were then painted with a DDT paint, and by mistake the oil-bound water paint contained only 0.5 per cent of DDT. It was found that 90 per cent kills of houseflies were obtained over night as compared with negligible kills in an identical room painted with the oil-bound water paint containing no DDT.

Experiments with oil paints and synthetic varnishes show that in certain continuous film-forming media DDT retains its insecticidal effect.

The results being obtained in a factory canteen painted with the DDT oil-bound water paint support the laboratory and field experimental results. *Chem. Trade J. & Chem. Engineer,* 115, 432 (1944).

Outdoor Tick Control

Nicotine sulfate (40 per cent nicotine) diluted 1:200, and applied as a spray about houses and camps, produced a 90 per cent reduction of American dog ticks for 2-3 days, but many of the ticks recovered. A spray of 1.5 per cent sodium fluoride and 0.5 per cent nicotine sulfate gave a quick knockdown and kill of *D. variabilis, Ixodes scapularis* and *Amblyomma americanum,* but injured vegetation, also the chigger, *Acariscus masoni* was not affected. Some commercial preparations containing 4,6-dinitro-*ortho*-cyclohexyl phenol were almost as effective as sodium fluoride but were equally injurious to vegetation. A

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spray containing 2.6 ml. of purified pyrethrum extract containing 20 per cent of pyrethrum, and isobutyl undecylene amide, in 1 gallon of water equalled in effectiveness the sodium fluoride-nicotine sulfate spray for *A. americanum*, and at higher dilution was effective against *I. scapularis*, without injuring plants.

Rapidity of reinfestation after spraying with any mixture varied with the numbers of moulting and migrating ticks, but usually reached 75 per cent reduction for one week. These investigations result in the recommendation that for areas where plants must not be injured, the nicotine sulfate spray should be used; for areas where plant injury is not important, the sodium fluoride-nicotine sulfate mixture should be used. C. N. Smith and H. K. Gouck. *J. Econ. Entomol.* 37, 85-7 (1944).

—— • ——

Mothproofing Agents

For the protection of wool, textiles, furs, hair, feathers, leather etc., against moth and other pests, instead of aromatic hydroxy compounds containing at least one higher aliphatic radical and preferably also halogen, are used their etherification and esterification products. Deutsche Hydrierwerke A.G. German Patent No. 738,-633; through Chem. Abs.

—— • ——

General Insecticide

Insecticides suitable for combating flies, mosquitoes and common agricultural insect pests are formed to contain an inert powder or liquid vehicle, together with 0.5-10 per cent of *beta*-(2-benzothiazolylthio)-*beta'*-chloro diethyl ether. G. H. Coleman and C. L. Moyle, to The Dow Chemical Co. U. S. Patent No. 2,352,078.

—— • ——

Low Grade Rotenone Source

Considerable quantities of *Derris malaccensis* dust containing a trace of rotenone were in storage in the United States during 1943. Experiments with this dust made in comparison with standard rotenone-bearing materials showed the following: *D. malaccensis* dust equalled or surpassed dusts containing 0.5 per cent of rotenone or dusts containing 0.4 per cent of rotenone plus 2 per cent of a commercial thiocyanate compound, for control of a number of vegetable pests. B. B. Pepper and R. S. Filmer. *J. Econ. Entomol.* 37, 248-52 (1944).

—— • ——

Fumigants for Lice

This investigation, prompted by the limitations of hydrogen cyanide as a louse fumigant, was concerned with the effect of fumigants on this insect and its eggs. Apparatus and methods of rearing and handling lice are described. Sulfur dioxide, hydrogen sulfide and ammonia did not prove suitable owing to low toxicity, ethylene oxide because it must be handled in heavy cylinders, and methyl bromide because of inadequate supply. Methyl formate and ethyl formate were chosen for practical tests because of their comparatively high toxicity to lice and their eggs and their low toxicity to man. Methyl acetate was not sufficiently toxic and methyl monochloro acetate was not available.

Most chlorinated hydrocarbons were not sufficiently toxic, but ethylene dichloride will be tested further. Chloropicrin is highly toxic to lice but demands too much care in handling. Trichloroacetonitrile is highly toxic, strongly lachrymatory but it would be preferable to chloropicrin. Carbon disulfide lacks sufficient toxicity and is inflammable. *beta*-Methyl allyl chloride is a good fumigant above 20° C. The following compounds have been selected for practical tests; Methyl formate, ethyl formate, *beta*-methyl-allyl chloride, trichloro acetonitrile, ethylene dichloride, and chloropicrin. W. A. L. David. *Bull. Entomol. Research.* 35, 79-80 (1944).

—— • ——

Athlete's Foot Treatment

A simple and effective preparation for treating athlete's foot is as follows:

Salicylic acid, U.S.P....	10 gms.
Acetone, U.S.P.	33 cc.
Ethyl alcohol, 85%.....	33 cc.
Glycerine, U.S.P.	33 cc.

These are mixed in the order given. Salicylic acid is the active fungicide, while acetone and alcohol serve as solvent. Glycerine is said to help prevent dehydration and other undesirable effects of the alcohol. The solution is applied to the infected areas and five minutes allowed for drying. The results are reported very successful; in clinical work more than half the patients treated were completely healed after one application and the rest after two or three treatments at five to seven-day intervals. W. B. Albert and R. F. Ziegler. *Southern Med. J.* 37, 348 (1944); through Bull. Glycerine Producers' Assoc. November, 1944.

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Chlorine Disinfectants

Sodium hypochlorite solution for use as a cleaner and disinfectant may be made from

Caustic soda	125 lbs.
Chlorine	100 lbs.
Water	400-500 gals.

This solution contains excess free alkali and has a strength of about 5 per cent. The solution should be cooled while the chlorine is being passed in. A 25 per cent solution to be diluted as required is made from

Caustic soda	120 lbs.
Chlorine	140 lbs.
Water	70-80 gals.

Soda ash can also be used as one of the alkaline agents. *Ind. Chemist* p. 625, November 1944.

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Beetle Attractants

Mixtures containing 90 parts by volume of anethole and 10 parts of pimenta leaf oil proved equal to geraniol-eugenol mixture as attractants for the Japanese beetle, *Popillia japonica*. Both anethole and pimenta leaf oil are available, while commercial geraniol, obtained largely from citronella oil from the Far East, is scarce. W. E. Fleming and R. D. Chisholm. *J. Econ. Entomol.* 37, 116 (1944).

—— • ——

Insecticide Role in War

The role of some of the newer insecticides in aiding the war effort is summarized by Dr. R. C. Roark in an article in the September, 1944, issue of *Chemical and Engineering News*. The article deals briefly with the contribution of the thiocyanates, and also discusses DDT. The function of synergists in increasing the efficiency of our limited insecticide supplies is discussed and new methods of application of insecticides, including aerosol application, are also reviewed.

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REPELLENCY TESTS

(*From Page* 107)

the death rate among the very old individuals may influence the results. However, the age mortality is not likely to be significant in short duration tests. Thysanurans 9 to 12 mm. long exclusive of antennae and caudal appendages will produce several times more damage than smaller individuals (Table 8). The females of all species are easily determined by the visibility of the ovipositor from a dorsal view in specimens that are approximately half or more developed. If the specimens are sufficiently developed so that the sexes can be readily determined, heavy consumption of food occurs. Large nymphs or recently matured adults are suitable, especially for short duration tests of seven to ten days (Figs. 1, 3 & 4). Twenty to 30 roaches per test are ample.

The physical conditions under which the tests should be conducted are easy to establish and maintain. The firebrat has an optimum temperature requirement of about 37°C. (Sweetman, 1938), the silverfish requires a temperature near 27° (Sweetman, 1939), and the two species of *Ctenolepisma* do well in a temperature in the vicinity of 30° (Sweetman, 1941). Roaches require temperatures of 24° to 28° C. Temperatures slightly above that of the ordinary room (22°C.) are satisfactory for testing with all species except the firebrat, which feeds much more vigorously at higher temperatures.

The relative humidity should range from 75 to 85 per cent for the thysanurans and should not be permitted to remain much below 75 per cent at the above temperatures, or feeding will be greatly reduced. Roaches prefer a slightly higher humidity, but are more resistant to drier conditions than the thysanurans.

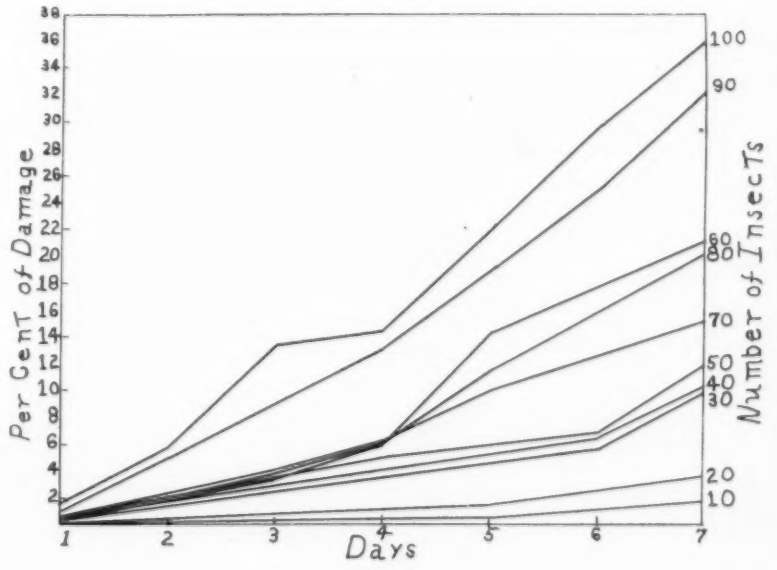
Samples of fabrics or papers can be tested for damage by thysanurans in glass, enamel, or other type of cage as long as the sides are smooth and nearly vertical as these insects cannot crawl on a clean, smooth, vertical surface. A depth of one inch is ample but deeper cages may be used. Sufficient dust to permit escape does not accumulate on the walls of the deeper cages as quickly. The sides of the cages should be freed of dust and insect scales about every 10 days with long-time tests to prevent escape. Petri dishes with covers can be used as testing cages if not more than 15 mature *Ctenolepisma* or 20 *Lepisma* are used, provided the sample has not had deterrent treatments. Crowding of the insects encourages cannibalism and the appendages soon become mutilated and death is not infrequent, especially with *Thermobia*. Contamination of the cloth samples from the wounds or dead insects may stimulate feeding on a sample that is otherwise unattractive. Roaches can climb smooth vertical walls of cages more readily than the thysanurans, so that slippery materials as cellophane or greasy surfaces, especially on inward-curved walls are necessary, or screen covers can be used to retain them. Open cages, especially for testing samples treated with deterrents are desirable to avoid possible toxic action from fumes.

Several sizes of fabric and paper samples have been tested. The roaches and thysanurans are largely surface feeders, which renders the damage readily visible. Large samples require more time to examine for damage and offer no advantage. Test samples 1" square or 1" x 2" are convenient sizes to use and can be examined quickly (Fig. 7). The larger size test sample is superior with the larger roaches. It is important to have square or rectangular samples of fabric cut along the threads as this increases the ease of measuring damage.

Measurement of damage by visual examination has proven entirely satisfactory. A simple means of determining the damage in percentage of surface injury is by use of a glass plate with a ruled cross-sectioned area the size of the test sample (Fig. 6). An inch square area can be divided into ¼, ⅛, or 1/10 inch divisions. It is very easy to estimate the percentage of surface damaged by use of the 16, 64, or 100 small divisions per inch square of surface (Fig. 6). The test sample can be placed on a card and the cross-sectioned glass or other transparent material placed on top of the damaged sample. Damage of one per cent or less, if concentrated can be observed with the naked eye, but the aid of a microscope or even a hand lens greatly facilitates the time and accuracy in estimation of damage, especially when damage is slight.

Weighing of the sample after reducing the moisture content to a

Figure 5. The percentage of damage produced by various numbers of the four-lined silverfish, Ctenolepisma quadriseriata, to cloth samples when offered no other food.



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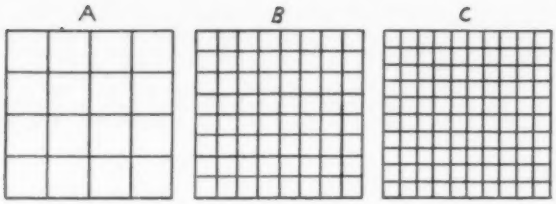


Figure 6. Examples of the scales, divided into 16, 64, and 100 divisions, used to estimate the percentage of damage to fabrics and paper produced by surface feeding insects. A—¼ inch divisions; B—⅛ inch divisions; C—1/10 inch divisions.

constant figure as recommended for carpet beetle and clothes moth testing (Fletcher, 1943) could be used. However, concentrated damage on a small portion of the sample by weighing might give a figure similar to general surface injury on another sample. Since the thysanurans and roaches are surface feeders, a measurement in percentage of the extent of surface damaged is very important. If feeding is confined to isolated spots, it suggests the possibility of contamination of the fabric with foreign substances. It frequently happens that either the warp or woof only of a fabric or that certain types of threads only in a pattern are damaged (Fig. 2).

The mortality of the test insects should be recorded, especially when deterrents are used to determine the relationship between damage and mortality. If the death rate is high in a short duration test when no deterrents have been used, it indicates unfavorable physical conditions and the test cannot be considered reliable without further testing.

It is desirable to use two or three replicates of a test cloth or paper. Usually all of the samples will be damaged if the cloth is at all attractive (Tables 4 & 9). Occasionally test samples of cloth may be contaminated in handling with a foreign substance that is attractive to the insects and feeding on the cloth then occurs. If only one replicate is attacked by the insects, tests should be made to determine if contamination is a factor.

Check cages of insects should be used to determine if the physical environment is suitable or if the sample is toxic. Food on which the insects were reared or as recommended in an earlier section should be offered to the check insects. Short duration tests under favorable physical conditions should have little mortality, except where toxic deterrents are used.

Tests were conducted to determine if starvation might force the insects to feed on cloth they would normally avoid if other food was available (Tables 1 & 9). Attractive cloth was damaged in the presence or absence of other attractive food, moderately attractive cloth was damaged in the absence of other food only, while a few of the unattractive samples of cloth were damaged, but only in the absence of other food. This is shown further in Fig. 7. Two unattractive synthetic fabrics and a 100 per cent wool fabric were offered to thysanurans in the absence and presence of other suitable food. The two synthetic fabrics in the absence of other food (Fig. 7B) show damage from nibbling along the edges. Observation of the feeding insects indicated that the damage was produced by repeated trial nibbling when the insects came in contact with the fabrics, rather than by continued feeding. The wool sample which was less attractive showed traces only of similar feeding, which is not apparent in the illustration. Certain samples of cloth did not show any injury after weeks of exposure to the insects in the presence of food.

Summary

Insects: thysanurans and roaches

Thysanurans

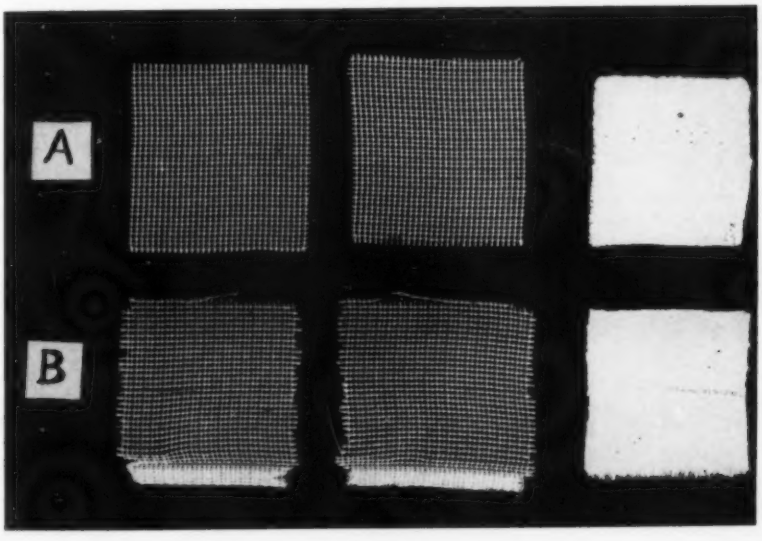
Ctenolepisma quadriseriata
- Widespread in the East
- Feeds vigorously on a great variety of materials
- Easy to collect
- Difficult to rear

Lepisma saccharina
- Widespread
- Feeds less vigorously
- Easy to rear or collect

Thermobia domestica
- Widespread
- Feeds vigorously at high temperatures (37°C.)
- Easy to rear or collect
- Much more cannibalistic

Ctenolepisma urbana
- Widespread in the South
- Not adequately tested; probably similar to *C. quadriseriata*

Figure 7. The damage produced by the four-lined silverfish, Ctenolepisma quadriseriata, to two unattractive synthetic fabrics and a 100 per cent wool fabric. A—with additional food; B—without additional food.



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Testing procedure
Practical requirements of test
Short duration
Simple equipment
Environmental needs easy to establish and maintain
Non-technical operator with direction
Age and size
Thysanurans
9 to 12 mm. long; nearly mature
Roaches
Large nymphs or young adults
Number of insects and duration of test
Thysanurans
25 to 30 for one week
15 to 20 for ten days
10 for two weeks
Roaches
20 to 30 for seven to ten days
Physical environmental needs
Temperature
Thysanurans
Lepisma 27°C.
Ctenolepisma 30°C.
Thermobia 37°C.
Roaches
24° to 28°C.
Relative humidity
Thysanurans
75 to 85 per cent
Roaches
80 to 95 per cent
Light
Avoid direct sunlight
Food
Samples only for tests for toxicity, repellency, or possible damage
Samples plus other suitable food for probable damage
Check insects
Thysanurans
Food on which reared
or
Whole wheat flour, powdered yeast, and lean dried beef
or
Haydak's food in dry state

Roaches
Food on which reared
or
Haydak's food moistened with honey and glycerine
Type of cage for testing samples
Thysanurans
Smooth, nearly vertical wall one inch or more in depth
Width 5 to 10 inches; avoid crowding
Without cover or, with cover if no danger of injurious fumes
Roaches
Width 6 to 12 inches; avoid crowding
Screen cover or, solid cover if no danger of injurious fumes
Size of test sample
1″ x 1″ for thysanurans and small roaches
1″ x 2″ for large roaches
Replicates
Two to three
Measurement of damage
Visual examination determined as percentage of surface damaged or destroyed
Weight of samples at beginning and end of test
Mortality
Deterrent treated samples: to determine relationship to damage
Check: to determine if environment is suitable

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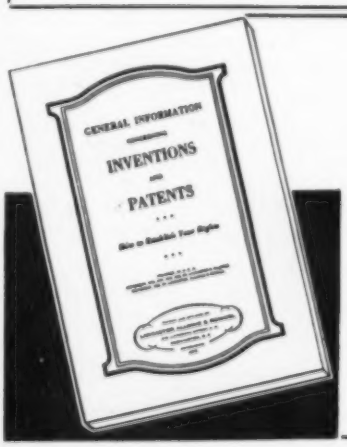

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TRADE NEWS . . .

Simanton Joins Shell

Dr. W. A. Simanton, formerly chief entomologist for the specialty division of the Gulf Oil Co., Pittsburgh, is now associated with the Shell Development Co., Emeryville, Calif. Dr. Simanton has been succeeded by A. C. Miller at Gulf Oil.

Amer. Disinfecting Changes Name

American Disinfecting Co., Sedalia, Mo., has changed the company name to Adco, Inc. There has been no change in officers or personnel, V. D. VanDyne continuing as president, Charles M. Van Dyne, vice-president, and E. H. Evans, secretary-treasurer.

Ask More Aerosol "Bombs"

A speed-up in the production of the aerosol, "Freon" type "mosquito bomb" has been requested by the office of the Quartermaster General, it was announced Feb. 18. New contracts have been signed for production of the anti-malarial devices by additional manufacturing plants, and former contractors have been assigned new and larger quotas. Chief difficulty, it was pointed out, in the manufacture of these "bombs" has been the procurement of the steel containers in which the insecticidal aerosols are packed.

O'Cedar Changes Announced

P. K. O'Connor, purchasing agent, has been made assistant to G. Barnes, the executive vice-president and general manager of O-Cedar Corp., Chicago, and W. C. Arterburn, Mr. O'Connor's assistant, has been named purchasing agent to succeed him.

Dr. C. C. McDonnell Retires

Dr. C. C. McDonnell, chief, Insecticide Division, Livestock and Meats Branch, Office of Distribution, War Food Administration, U. S. Department of Agriculture, retired from the Government service on March 1 and was succeeded as chief by Dr. W. G. Reed, previously attached to the Meat Inspection Service of WFA at Chicago. Dr. E. L. Griffin continues as assistant chief of the Insecticide

DR. C. C. McDONNELL

Division. Dr. McDonnell who reached the retirement age recently, had been associated with the Department of Agriculture for the past 38 years, becoming chief in 1928 upon the death of Dr. J. K. Haywood and having compiled an impressive record in enforcement of the Insecticide Act of 1910. Dr. Reed has been associated with the Department of Agriculture since 1919.

Mallis Joins Gulf Research

Arnold Mallis, who has recently been connected with the Department of Entomology of the University of Delaware joins the Insecticide Testing Laboratory of Gulf Development Co., Pittsburgh, March 15. Mr. Mallis is the author of a practical book on pest control, which will shortly be published by MacNair-Dorland Co.

Ease DDT for Experimentation

Some DDT has been released for agricultural and other civiilan experimentation without individual application to the WPB, the War Production Board announced Feb. 12. Previously, requests for DDT for research work required application to the WPB for individual allocations of the chemical. Now a limited quantity of the material can be obtained directly from suppliers without direct WPB authorization. DDT producers have been instructed by the WPB, however, in distributing the chemical to give consideration to work carried out under the supervision of experienced investigators, aimed at determining the suitability of DDT for agricultural and other civilian uses, it was said.

This DDT release has been effected according to provisions of paragraph "f" of Order M-300, the general chemicals allocation order, of which schedule 25 governs DDT.

New Boston Insecticide Ordinance

A proposed ordinance of Boston, relating to the sale, use, etc., of insecticides is being distributed by the National Association of Insecticide and Disinfectant Manufacturers, Inc., New York, among its members for study and comment.

Powell Move Main Office

John Powell & Co., New York, moved their executive offices to 1 Park Ave. on March 5th. For the past eighteen years, they have been located at 114 East 32nd St., New York, at which address their technical sales department, export department and laboratories will remain. Both chemical and biological laboratory facilities will be expanded at the 32nd Street address. The new executive offices are located directly across 32nd Street from their original quarters. Telephone numbers will remain unchanged.

WFA Shifts Groggins

P. H. Groggins, formerly chief of the Chemicals and Fertilizers Branch, Office of Materials and Facilities, War Food Administration, has recently been made assistant to the director of the Office of Materials and Facilities. One of Mr. Groggins' major tasks in his new post will be to prepare a brief history of his activities in charge of chemicals from the days of the National Defense Advisory Commission up to the present time. G. F. McCloud succeeds him as chief of the Chemicals and Fertilizers Branch.

Hindle Standard Synthetics Pres.

Following the reorganization of Standard Synthetics, Inc., New York, John Leslie Hindle has become

JOHN L. HINDLE

president and Oliver James Lane vice-president, according to a recent announcement from the company. Mr. Hindle succeeds Edward Remus, former president and treasurer, who resigned to form his own company in January. Mr. Hindle, a native of England, is a graduate of Leeds University with a Bachelor of Science degree in organic chemistry. After spending three years in India, he founded Standard Synthetics, Ltd., London, in 1923, to manufacture aromatics and distill essential oils. Mr. Hindle has directed the increasingly important New York operations personally since Nov., 1939. With his wife and two children he makes his home in East Orange, N. J.

Sanitary Supply Assn. Secretary

Directors of the National Sanitary Supply Association, meeting in Chicago, Feb. 8, completed arrangements for establishing a national headquarters office in that city with a Chicago business man, L. J. Kelly, in charge as full time executive secretary. Mr. Kelly comes to the Association from the Illinois State Chamber of Commerce, where he had been serving on the executive staff for several years. Previously he had been connected in executive capacities with several industrial organizations. The new office, Mr. Kelly announced will be in Room 1713, City Hall Square Bldg., 139 N. Clark St., Chicago. At the Feb. 8 meeting the directors decided, also, to defer action on an annual convention until later in the year, when efforts will be made to hold one, possibly in October.

New Army Insect Repellent

An insect repellent new in some respects is reported from Washington being formulated under direction of the Army. Dimethyl phthalate which has been used in combination with other materials for the small-package insect repellent for application to the surface of the body, forms the basis of the new product in combination with benzyl benzoate. The new liquid is designed for dipping clothing, shoes, socks, etc., particularly for protection against ground insects, such as chiggers and the like. Reports indicate that it will be required in large gallonage. Owing to the fact that benzyl benzoate is produced from toluol, already in limited supply and under allocation as the raw material for TNT, this is stated to present a potential bottleneck in producing the new repellent.

Oil Specialties Moves

Oil Specialties and Refining Co., Brooklyn, recently moved to new quarters at 18 Bridge St., Brooklyn, N. Y., where the factory and general offices will be housed. This move represents an expansion of both facilities and production capacity. The firm manufactures waxes, polishes and cleaners, and was formerly located at 109 Walworth St.

Advisory Committee To Meet

A meeting of the Household and Industrial Insecticide and Disinfectant Manufacturers Industry Advisory Committee will be held in Washington on March 28, at 1:30 P.M., John A. Rodda, chief of the Insecticides & Fungicides Unit of the War Production Board has announced. A number of government representatives will be present at the meeeting to lead discussions relating to manpower, containers, (glass containers, metal cans and fiber boxes) and sprayers and raw material supplies (pyrethrum, rotenone, experimental quantities of DDT, and arsenic).

Sheehan Joins Arnold, Hoffman

Bart Sheehan, New York sales representative for the Grasselli chemicals department of E. I. du Pont de

BART SHEEHAN

Nemours & Co., Wilmington, resigned that position Feb. 15, to take a similar position with Arnold, Hoffman Co., New York, textile specialty and detergent firm. Mr. Sheehan joined Grasselli Chemical Co. in 1924, and following its merger with du Pont in 1928, he was assigned to the New York sales staff, a post he held until his recent resignation. A native of New York, Mr. Sheehan was educated at Regis High School, there, and at Fordham University.

L. A. Kaas Insecticide Mfg. Dies

Louis A. Kaas, 74, vice-president and founder of Louis A. Kaas, Inc., Newark, N. J., insecticide manufacturing firm, died at his home in Maplewood, N. J., Feb. 9. He had been in business since 1894, the firm growing out of a roach powder Mr. Kaas developed. The firm made all kinds of exterminating compounds and did a large package business under the label "Big K." Mr. Kaas is survived by his widow, Mrs. Nellie Kaas.

Lloyd Fischbeck in Army

C. Lloyd Fischbeck, division manager of P. R. Dreyer Inc., New York, entered the U. S. Army at Fort Dix, N. J. on March 7. He is a son of Charles Fischbeck, former vice-president of Dreyer and now of George Uhe, Inc., New York.

Scan 1945 Insecticide Uses

SUPPLIES of insecticides for agricultural use in 1945 were discussed at recent industry advisory committee meetings of the arsenical insecticides, pyrethrum and DDT industries, the War Production Board reported early last month. WPB emphasized that farmers should order sufficient calcium arsenate to provide for possible emergency use against insect infestations, primarily in the cotton States. Even though lead supplies have recently become more critical, the Chemicals Bureau of WPB has provided from its lead allotment enough for the lead arsenate requirements of the War Food Administration and the Foreign Economic Administration, WPB said.

WPB emphasized to the committee that DDT will be released exclusively for experimental and research purposes, and that placement of orders for other insecticides should not be based on the supposition that DDT will be available for commercial use in 1945. It is expected that sufficient arsenicals will be available to meet all 1945 requirements of domestic agriculture, the committee was told.

At the request of WFA, WPB will allocate pyrethrum for the following agricultural uses in 1945: Leafhoppers on beans; cabbage loopers on cabbage, broccoli, cauliflower; plant bugs and leafhoppers on sugar seedbeet crops; leafhoppers on raisin grape; leafhoppers and worms on cranberries; leaftiers on celery; Diabrotica beetle control in California on ripening fruit; mushroom flies.

With the exception of limited quantities of pyrethrum that do not meet military specifications, the entire output of the insecticide will be channeled to the military for use in the production of aerosol bombs, the Pyrethrum Producers Industry Advisory Committee was informed by WPB.

In view of recently increased requirements for DDT, none will be available for other than military use, with the exception of limited quantities to be made available for experimental and research work, WPB told the DDT Producers Industry Advisory Committee.

◆

New N.A.I.D.M. Members

Six firms have recently been elected to active membership and four to associate membership in the National Association of Insecticide and Disinfectant Manufacturers, Inc., New York, it was announced early last month. Those elected to active membership include: Chemical Service Co., Baltimore; State Chemical Mfg. Co., Cleveland; Buckingham Wax Co., Long Island City, N. Y.; George H. Nowland Co., Cincinnati; Chemical Mfg. & Distributing Co., Easton, Pa. and Harrison Oil Co., Milwaukee. New associate members are E. F. Drew & Co., Boonton, N. J.; Anderson-Prichard Oil Corp., Oklahoma City; Mantrose Corp., Brooklyn, and Schimmel & Co., New York.

◆

Proposed Fed. Insecticide Act

A tentative draft of the newly proposed Federal Insecticide Act, which is to regulate the manufacture, sale and transportation of economic poisons and devices, was issued recently. Copies are available through the National Association of Insecticide and Disinfectant Manufacturers, Inc., New York.

◆

Purdue Reports on Roach Study

Seeking to determine the value of more than 100 different materials as substitutes for sodium fluoride and pyrethrum for cockroach control, Purdue Agricultural Experiment Station entomologists, Lafayette, Ind., conducted 2,612 tests in settling dust chambers. Various inert dusts were examined to determine their value as diluents from the standpoint of dusting properties and in reducing the percentage of chemical necessary.

A total of 180 dust mixtures were tested on the German cockroach but none was found to equal sodium fluoride and pyrethrum in effectiveness against this species. Another series of tests covered 45 organic chemicals of which seven gave promising results. Further phases of the study covered particle size of insecticides, the influence of carrier or diluent on the insecticide and various baits, including different poisons, food mixtures and mechanical containers for holding baits. Results of the study are briefly summarized in the Purdue station's 56th annual report.

◆

Who Makes "Zip" Cleaner?

We have been asked who makes "Zip" waterless cleaner? Anyone knowing the name of the manufacturer is asked to get in touch with *Soap & Sanitary Chemicals* so that we may pass this information along to the firm making the request.

◆

ACS Midwest Award to Kyrides

Dr. Lucas P. Kyrides, research director of the organic chemicals division of Monsanto Chemical Co., St. Louis, was named Feb. 25 as the winner of the first Midwest Award of the American Chemical Society. The initial presentation of the gold medallion was to be made in the Hotel Coronado, St. Louis, Mar. 5, under the auspices of the St. Louis section of the American Chemical Society.

◆

Penna. Salt Making DDT

Pennsylvania Salt Manufacturing Co., Philadelphia, announced Feb. 14, that it has completed installation of facilities for the manufacture of DDT on a commercial scale. Production has begun for the Army and Navy.

◆

Pest Control Meeting Considered

The National Pest Control Association recently announced that its board of directors had not made any final decision as yet regarding its annual meeting, which was to be held in Cincinnati, in October. The group's attitude is to wait and see what the situation will be later on before taking any decisive action at this time. The group does urge that no state or regional groups of pest control operators ask for permission to meet if attendance is to be more than 50.

Flexibility In Crutcher Performance

The HUBER ELECTRO PERFECTION CRUTCHER offers a choice of four forward and reverse speeds. The flexibility in operating technique afforded by this wide choice of crutcher speeds should be decidedly interesting to many soap makers. Available in three sizes,—1,500, 2,400 and 3,200 pounds.

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N. A. I. D. M. Committees

HENRY A. NELSON of Chemical Supply Co., Cleveland, president of the National Association of Insecticide & Disinfectant Manufacturers, has just announced the complete list of NAIDM Committee Members for 1945, as follows:

Executive Committee—Chairman: Ira P. MacNair, MacNair-Dorland Co.; H. W. Hamilton, Koppers Co., White Tar Div.; John Powell, John Powell & Co.; C. L. Weirich, The C. B. Dolge Co.; W. J. Zick, Stanco Inc.

Associate Members Committee—Chairman: A L. VanAmeringen, van Ameringen-Haebler Inc.; L. J. LaCava, Continental Can Co.; J. B. Magnus, Magnus, Mabee & Reynard; M. Lemmermeyer, Aromatic Products Inc..

Legislative Committee — Chairman: W. J. Zick, Stanco, Inc.; C. L. Fardwell, McCormick & Co.; NAIDM Board of Governors.

Membership Committee — Chairman: D. W. Lynch, John Powell & Co.; F. P. McNess, Furst-McNess Inc.; Wm. F. Pollnow, Vestal Chemical Laboratories Inc.

Exhibit and Booklet Committee—Chairman: A. W. Morrison, Socony-Vacuum Oil Co.; H. W. Hamilton, Koppers Co., White Tar Div.; Ira P. MacNair, MacNair-Dorland Co.; John A. Marcuse, West Disinfecting Co.; John Powell, John Powell & Co.

Public Purchases Committee—Chairman: J. L. Brenn, Huntington Laboratories Inc.; J. H. Bender, Clarkson Chemical Co. Inc.; A. L. Feldman, Puritan Chemical Co.

Sprayer Committee — Chairman: F. C. Nelson, Stanco Inc.; Geo. A. Arehart, Universal Metal Products Co.; C. M. Bremmer, Breuer Elec. Mfg. Co.; Wm. Fromm, Dumore Co.; R. C. Hudson, Hudson Mfg Co.; A. C. Miller, Gulf Research & Development Corp.; V. A. Snell, Lowell Mfg. Co.; Martin Vogel, Standard Container Inc.; Gilbert W. Wilkin, Auto Compressor Co.; Roger Wilson, Continental Can Co.; Dr. Frank O. Hazard, Wilmington College; Dr. E. R. McGovran, Bureau of Entymology & Plant Quarantine.

Marketing Committees

Disinfectant Marketing — Chairman: L. H. Gerson, The Hunt Mfg. Co.; W. B. Eddy, Rochester Germicide Co.; Alexander Fabry, Adco Inc.; L. B. Joel, The Selig Co.; John A. Marcuse, West Disinfecting Co.; Paul L. Robbins, Geo. B. Robbins Disinfectant Co.; C. E. Timson, Wm. Cooper & Nephews Inc.

Insecticide Marketing — Chairman: L. W. Jones, McCormick & Co.; H. W. Allers, The Solarine Co.; Earle Ament, The Dethol Mfg. Co.; F. O. Huckins, Sinclair Refg. Co.; S. Lefkowitz, Enoz Chemical Co.; James McConnon, McConnon & Co.; H. W. Moburg, Rex Research Corp.

Sanitary Specialties Marketing—Chairman: L. B. Schwarcz, Ampion Corp.; Henry J. Brownstein, Hysan Products Co.; Joseph Fuld, Fuld Bros.; R. M. Lockhart, Candy & Co.; B. H. Reschke, The Pioneer Mfg. Co.; Geo. L. Simmonds, U. S. Sanitary Specialties Corp.

Scientific Committees

Chemical Analyses — Chairman: N. J. Gothard, Sinclair Refining Co.; George Hartz, John Powell & Co.; Dr. Harvey Seil, Seil, Putt & Rusby Inc.; Dr. J. J. T. Graham, U. S. Dept. Agriculture.

Disinfectant Scientific — Chairman: C. L. Weirich, The C. B. Dolge Co.; Vice Chairman: B. G. Philbrick, Skinner & Sherman Inc.; Vice Chairman: E. G. Klarmann, Lehn & Fink Products Corp.; P. G. Bartlett, Rohm & Haas Co.; Arthur Cade, Givaudan-Delawanna; A. S. duBois, Onyx Oil & Chemical Co.; John Fleming, Monsanto Chemical Co.;Melvin Fuld, Fuld Bros.; **W. A. Hadfield, Pennsylvania Salt Mfg.** Co.; C. S. Kimball, Foster D. Snell Inc.; Frank U. Rapp, Hercules Powder Co.; G. F. Reddish, Lambert Pharmacal Co.; J. N. Roche, Koppers Co.; W. H. Sachs, Puritan Chemical Co.; Paul Wolf, Dow Chemical Co.; Jack C. Varley, Baird & McGuire Inc.; Dr. C. M. Brewer, Food Distribution Administration, Washington, D. C.

Insecticide Scientific—Chairman: F. C. Nelson, Stanco Inc.; Vice Chairman: A. E. Badertscher, *Powder Insecticides*, McCormick & Co.; Vice Chairman: C. R. Cleveland, *Cattle Sprays*, Standard Oil Co. (Indiana); Vice Chairman: F. W. Fletcher, *Mothproofing Investigations*, Dow Chemical Co.; G. A. Bowden, Boyle-Midway Inc.; Heber C. Donohue, Wm. Peterman Inc.; Victor Froelicher, Geigy & Co.; A. H. Goddin, duPont Experimental Station; A. G. Grady, Sinclair Refining Co.; P. D. Harwood, Dr. Hess & Clark; A. C. Miller, Gulf Research & Develop. Corp.; D. F. Murphy, Rohm & Haas Co.; C. E. Smith, Socony-Vacuum Oil Co.; Friar Thompson Jr., Hercules Powder Co.; Alfred Weed, John Powell & Co.; Dr. E. R. McGovran, U. S. Dept. Agriculture Beltsville, Md.; Dr. Frank O. Hazard, Wilmington College; C. J. Weinmann, Ill. State Natl. History Survey, Urbana, Ill.; B. G. Berger, Ill. State Natl. History Survey, Urbana, Ill.

Sanitary Specialties Scientific—Chairman: A. C. Pabst, Socony-Vacuum Oil Co.; Paul Amman, G. H. Wood & Co. Ltd.; L. D. Benedict, Plunkett Chemical Co.; W. Kaye, Fuld Bros.; C. S. Kimball, Foster D. Snell Inc.; C. T. Rienhart, Shell Oil Co.; R. B. Trusler, Davies-Young Soap Co.; Vladimir Tuma, Buckingham Wax Co.

Maj. Breuer Marries

The marriage on Jan. 27 of Major G. W. Breuer, AUS, vice-president of Breuer Electric Mfg. Co., Chicago, to Mildred Dolores Rea, of Baltimore, at the Post Chapel, Aberdeen Proving Grounds, Maryland, was announced recently. Following a brief visit with Maj. Breuer's mother, Mrs. Adam A. Breuer, in Glencos, Ill., the couple returned to Maryland where they will make their home. Maj. Breuer is the son of the late Adam A. Breuer, founder of the insecticide sprayer manufacturing firm bearing his name.

Purdue Codling Moth Studies

Investigators at Purdue Agricultural Experiment Station, Lafayette, Ind., have been studying means for making codling moth sprays more effective by increasing flocculation of the bentonites and developing combinations that would increase the effectiveness of nicotine compounds in the spray. In the latest annual report of the station a brief note on progress says that out of six mixtures "the best from the standpoint of greater flocculation and the quickest break was that in which 8 lbs. of aluminum chloride, 3 lbs. of Black Leaf-155 and 1 pint of soybean oil were used per 100 gallons of spray."

"The poorest tried," continues the report, "was that in which 12 lbs. of aluminum chloride, ½ pt. of 22 per cent liquid soap or its equivalent of soap chips, 3 lbs. of Black Leaf-155 and 1 pt. soybean oil were used per 100 gals. of spray."

"It was found," adds the report, "that whereas aluminum chloride would produce satisfactory flocculation in the laboratory, it could not be used in the orchard because severe injury resulted to fruit and foliage. The results indicate that aluminum sulfate should be used for this purpose." Further study of this finding was thereafter instituted.

Paint Men Hear Badertscher

Dr. Amos E. Badertscher, of McCormick & Co., Baltimore, was the guest speaker at a recent meeting of the Baltimore Paint Salesmen's Club. Dr. Badertscher spoke on recent developments in the insecticide, DDT, and outlined some of its future uses.

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INDUSTRIAL HAND CLEANERS

(*Continued from Page 35*)

"Igepon," etc.) and a soft scrubber which softens or dissolves in water and has no plumbing clogging tendencies. It should contain a minimum of free alkali and have a pH of 10 or less in a 1 per cent solution. It should contain no silica, quartz, pumice or feldspar nor any rosin, fillers or organic solvents.

Completing the job, Schwartz also developed methods for making suitable cleaners in cake, powder or liquid form. Thus, a cleanser that could be pressed into cake form could be made from:

	Parts
Neutral toilet soap	30
Colloidal clay (bentonite or keiselguhr)	30
Synthetic detergent	10
Lanolin	5
Perfume	1

By adding 25 parts of corn meal to make up 100 parts, the above mixture may be used to produce a powdered soap. Where a good liquid cleanser is required, this can be prepared by mixing equal parts of potassium-coconut oil soap and sulfonated castor oil to which 1 per cent of a synthetic detergent is added.

Because workers with dermatitis or sensitive or dry, defatted skin are generally advised to avoid soap, including products such as the above, and because a small proportion of persons do not tolerate soap, dermatologists have turned their attention to substances that could be used instead of soap under such circumstances. Considerable study has been devoted to the applicability of sulfonated oils for workers who have developed a dermatitis or who may not tolerate soap. Blank, (22) who has done pioneer work in this field, suggested the following formula as a soap substitute:

	Per Cent
Mixed sulfonated olive and tea-seed oil	25
Light liquid petrolatum	25
Water	50

More recently, Klauder and his associates (3) made a rather extensive study of the detergent action of various sulfonated oils and described three formulas which have since been included in the report of the Committee on Occupational Dermatoses. (20) The formula which they prefer because it is a satisfactory detergent and exerts more of an emollient effect, and to which they have devoted considerable attention, is as follows:

	Per Cent
Sulfonated neat's foot oil	45
Light liquid petrolatum	45
Gelatin, 25% aqeous solution	10

By adding white granulated corn meal to the above mixture, in the proportions of 1½ parts by weight of corn meal to 1 part by weight of the oil composition, a product is obtained which is suggested as a substitute for the popular mechanic abrasive soaps. This preparation, to which a 0.5 per cent solution of chlorobutanol is added to prevent mold or bacterial growth, was found to clean soiled hands of workmen as effectively as did any abrasive soap, and in addition acted not only as a detergent but as an emollient as well.

The addition of 1 part of a 20 per cent solution of sodium lauryl sulfate imparts lathering qualities and probably makes for better detergent action, but this combination has the disadvantage of having a slight drying action on the skin.

Schwartz (18) has also developed a combination of sulfonated oil and wetting agent for skin cleansing where soap cannot be employed. This is a mixture consisting of sulfonated castor oil having a pH of 7.2 and an oil content of 50 per cent with 2 per cent of one of the wetting agents such as "Santomerse," "Duponol," "Igepon" or the like. It is said to make a good cleanser that does not defat the skin and which may be used in the same way as liquid soap. The cleansing properties of this mixture can be increased without materially increasing its irritant properties by adding 1 to 2 per cent of an alkali like trisodium phosphate or sodium hexametaphosphate. The use of a mild perfuming agent like lavender or lilac may be needed to cover the odor.

In a later report, this worker (16) described a slight modification of the original liquid formula as follows:

	Parts
Neutral sulfonated castor oil	97
Pure castor oil	1
Santomerse (or other detergent)	2

Also included in this report was the following soap substitute which could be made in solid cake form from mixtures of synthetic detergents with colloidal clay, keiselguhr, or meerschaum, plus lanolin as an emollient:

	Parts
Nacconol (or other detergent)	20
Lanolin	3
Colloidal clay	75
Perfume	1

Where a superfatted soapless detergent is required, a formula given in a leading medical journal (23) should fill the bill:

	Per Cent
Sulfonated castor oil	90
Duponol W.A. pure	2
Castor oil	8

Occasionally special soapless detergents have been developed to meet the specific requirements of a particular industry. For example, the prevention of chloracne or "cable rash" occurring among ship yard workers and others handling or making chlorinated naphthalenes and related compounds, requires the use of a special cleanser. A composition for this purpose found effective by several investigators (24, 25) consists of:

	Parts
White corn meal	50.0
Butyl stearate	22.5
Sulfonated castor oil (75% oil)	22.5
Oleic acid	5.0

However, it must not be assumed that everyone is satisfied with these newer soap substitutes. Even those who recommend their use are aware of certain shortcomings. (18) Workers often dislike the odor of such products or complain of the lack of lather such as they get with soap. Quite pertinent in this connection is Goldman's (26) observation that at times people are not satisfied with the cleansing powers of these soap substitutes and it is hoped that further research will make them cheaper to buy, more agreeable to use and will help overcome the feeling of insufficient cleanliness which some persons seem to have after their use, because

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they are accustomed to associate heavy lather with the "feeling" of cleanliness.

On the other hand, there are indications that these detergents may have irritative qualities of their own. Many of these compounds are so new that there has been little time to really evaluate them except with regard to certain physical characteristics. (27) Some workers report repeated observations of dermatitis resulting from the use of sulfonated oils, while others claim that there is an incidence of less than 1 per cent positive patch tests for sensitivity to these compounds. (20) Sharlit (28) is strongly opposed to the use of wetting agents as soap substitutes because such compounds are known to increase the permeability of the keratin surface of the skin. The use of this type of cleansing agent, in his opinion, would increase the incidence of various forms of skin disorders.

All-in-all it is quite evident that industrial hand cleaners are going through something of a revolution. Some alert manufacturers have taken advantage of the new developments in this field and it would seem most important for all producers of such products to follow carefully the work being done by industrial physicians and industrial safety engineers. Conversely, producers of older, standard cleaners should not permit themselves to be stampeded into making items that require fuller evaluation with regard to efficiency, superiority and safety on the skin.

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PETROLEUM OILS FOR THE PCO

(*Continued from Page* 117)

The oils described in the accompanying table are taken as representative samples of specifications. It might be well to mention that the term Saybolt (Say.) 30 indicates a product that is water white and a lesser Saybolt number means an oil with possibly visible color.

The oils in this group are too well known to require much explanation. Straight kerosene is used as a solvent or carrier for wood preservative used in powder post beetle and termite control. Semi-refined kerosenes are often used for bedbug spray and for some fly sprays. The highly refined products are the most commonly used fly spray bases. The degree of refinement is largely reflected in color, odor and taste which are all properties the pest control operator can judge for himself. Taste is a factor that may be important for use around foods and is often not considered by the purchaser. Odor is important in many cases but it may be poor economy to buy highly refined oil base for freedom of odor and then use highly odorous toxicants or perfumes. Tendency to stain is important, but the staining of wallpaper is often due to factors inherent in the wallpaper rather than in the spray used.

There is no question of the need of using highly refined oils around food materials, but for many other purposes semi-refined oils may be substituted at a saving in cost. It is interesting that the Apco 467 described above is listed by the manufacturer in a technical bulletin as a deodorized naphtha. This is obviously a narrow cut of oil in the kerosene range of boiling points. The director of research in a letter classed this product as a refined kerosene. This is merely mentioned to show the broad usage of the term naphtha in the oil trade.

Mineral Seal Oil and Fuel Oil

Fuel oil is the highest boiling fraction of oil used to any extent by the pest control trade. It is too slow drying and too odorous to be used as a household spray but is widely used as a diluent for termite soil poisons and to some extent as a solvent for wood treating chemicals such as pentachlorphenol. Large amounts are used in mosquito control projects.

Mineral seal oil may be described as a refined grade of fuel oil.

Typical specifications follow:

Mineral Seal Oil and Fuel Oil

	Atlantic Refining Co.	*Standard of Indiana*	*Standard of Indiana*	*Standard of Indiana*
	Atlantic Furnace oil medium	Standard Heater oil	Stanolex Furnace oil	Mineral Seal oil
Color	—	Say.15	Say.2	Say.18
Initial B.P.	340 F.	351 F.	334 F.	498 F.
50% point	495 F.	446 F.	486 F.	446 F.
End point	620 F.	572 F.	625 F.	689 F.
Flash Tag.C.C.	135 F.	155 F.	155 F.	265 F.

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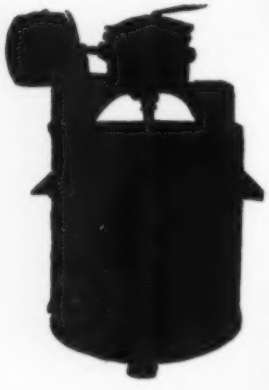

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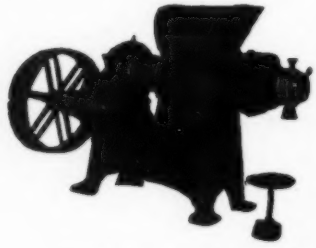

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- Blanchard No. 10-A and No. 14 Soap Powder Mills.
- J. H. Day Jaw Soap Crusher.
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- Allbright-Nell 10 inch Plodders.
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Chemist Wanted by large manufacturer of synthetic detergents. A chemist experienced in soaps, cleaners, floor waxes, and other detergent and sanitary specialties. Unusual opportunity for right man with large chemical manufacturer. Address Box No. 906 c/o *Soap & Sanitary Chemicals.*

Chemist with experience in insecticides, particularly pyrethrum, rotenone, and synthetics, wanted by well-known insecticide manufacturer. Unusual opportunity. Give details, past experience. Address Box No. 907, c/o *Soap & Sanitary Chemicals.*

SOAPMAKER for soap factory located in one of the boroughs of New York City. Give particulars as to experience. Address Box No. 909 c/o *Soap & Sanitary Chemicals.*

WANTED MILL & DRYER OPERATOR: (Proctor & Schwartz). Reliable and experienced for soap factory in New York City. Address Box No. 910 c/o *Soap & Sanitary Chemicals.*

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LIGNIN IN SOAP

(*From Page* 41)

readily etherified, esterified, nitrated, mercurated, and halogenated. It reacts with phenols, amines, and aldehydes; sulfur, sulfides, and sulfites.

There have been many uses proposed for lignin, none of which have been carried very far because hitherto no commercial supply of a standardized, reproducible grade has been available. Among the more important of these are in adhesives, as an adsorbent, as an extender in storage battery plates, in foundry core and sand binders, in cements and concretes, as an emulsion stabilizer, as a flotation aid for separating minerals from ores and in well drilling muds; as an aid in the fine grinding of clinkers and slag, as a dispersing agent and film forming ingredient of printing inks, in high pressure lubricants, in plastics, as a reinforcing agent for rubber; in resins, varnishes, and lacquers; and as an ion-exchange agent in the treatment of water.

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Toxicity of DDT

The synthetic insecticide DDT is acutely toxic by mouth to small laboratory animals such as rats, mice, guinea pigs, rabbits and chicks, in doses ranging from 150 to 750 mg per kilogram. It produces anorexia, tremors, depression and death. Wide individual variations in susceptibility are found, which makes the estimation of a safely tolerated dose very difficult. When it is added to the diet for 3 days to 20 weeks, definite signs of toxicity are produced in guinea pigs by levels of about 0.1 per cent, in rats and mice by 0.05 per cent, and in chicks by less than 0.05 per cent.

Prolonged application of powders containing 5 per cent of DDT to the skin produced no apparent systemic toxic effects or primary irritation. Solutions of DDT in dimethyl phthalate are absorbed by both intact and abraded skin. Such solutions produce a mild sensitization in guinea pigs. The daily application to the skin of small amounts of a 30 per cent solution of DDT corresponding to 150 mg. per kilogram per day of DDT, on rabbits, rats and guinea pigs, may cause death in some cases after 30 days. Wide individual variations in susceptibility are found. Apparently the unlimited use of DDT solutions on the skin is not free from danger. C. Woodard, A. A. Nelson and H. O. Calvery. J. Pharmacol. 82, 152-8, 159-66.

Synergist for Insecticides

To an insecticide containing pyrethrum and rotenone as toxicants is added as a promoter 10 per cent by volume of methylated naphthalene-rich oil. The latter contains at least 70 per cent by volume of methylated naphthalene. J. Hyman, to Velsicol Corp. U. S. Patent No. 2,347,265.

DDT-THANITE SPRAYS

(*From Page* 121)

this insecticide with *Thanite* in comparison with a pyrethrum spray. After a considerable amount of preliminary work in arriving at proper dosages and in developing a workable testing method, a critical series of tests was run. The results of this experiment are given in Table 2.

The data in Table 2 show that, under the rigorous conditions which prevailed during these tests (conditions of extremely short exposure, low dosage, and, in nearly all cases, with a marked breeze blowing) combinations of DDT and *Thanite* produced practically as good a knockdown as the comparative pyrethrum spray and gave kills which were far superior. The 20-80 combination of DDT-*Thanite*, which gave a paralysis of 86 per cent and a kill of 94 per cent as compared with corresponding figures of 88 per cent and 73 per cent for the pyrethrum spray, appears to be particularly promising.

These experiments indicate that DDT-*Thanite* combinations, such as those tested, may find considerable use as substitutes for pyrethrum in liquid mosquito sprays and suggest further trial as aerosols.

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Table 2. Comparative toxicities of pyrethrum and combinations of DDT and *Thanite* when used under field conditions against the adults of *Anopheles quadrimaculatus*.[1]

Material[2]	*Paralysis after 5-minute exposure*		*Dead 24 hours after exposure*[3]	
	Observed average in per cent	*Average angle of transformation*	*Observed average in per cent*	*Average angle of transformation*
1.5% Pyrethrol "20"	88	71.4	73	60.5
1.5% of a combination of 20% DDT and 80% *Thanite*	86	68.7	94	79.1
1.5% of a combination of 40% DDT and 60% *Thanite*	84	66.8	98	86.3
Least mean difference needed for significance		—[4]		11.7[5]

[1] The percentages listed in the table represent averages of 9 replications, in each of which 3 separate cages of mosquitoes were used.
[2] All toxicants were in solution in deodorized kerosene.
[3] A physical injury test in which 5 lots of mosquitoes were handled as the others under test but were not sprayed showed a 24-hour mortality of 6 per cent.
[4] The "F" test of analysis of variance indicates no significance.
[5] The "F" test of analysis of variance indicates high significance.

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Every effort is made to keep this index free of errors, but no responsibility is assumed for any omissions.

"Doan git excited, Cuthbert! Ah's jus workin' out a new idea for a Wheaties advertisement!"

In One Stroke . . .

SAID one of America's best known advertising agency space buyers recently: "An advertiser can cover an entire field in one stroke at low cost through the right business papers." In short, if you would have your advertising blanket any business or industrial field, you can accomplish this quickly and with a minimum of bother and waste through the business press.

If it happens to be the field of soap products, insecticides, disinfectants and allied chemical specialties which you want to cover "in one stroke," we suggest that you look into

SOAP *and Sanitary Chemicals*
254 WEST 31st STREET NEW YORK 1

Member Audit Bureau of Circulations

Tale Ends

FOR well over a year, Lever Brothers Co. has been a regular weekly television advertiser over WABD, New York. In fact, Lever started advertising Lifebuoy, Rinso, and Spry via television on Nov. 3, 1943. "Wednesday at nine is Lever Brothers time" on WABD, says recent *Printers' Ink*.

* * *

Foreign insects are becoming more prevalent in the U. S., says Dr. F. A. Fenton, Oklahoma A & M entomologist. The world-wide source of packages mailed to America by men in the armed services accounts for the importation of many new bugs. Government inspectors are just too few and too busy to cope with the situation.

* * *

What is sanitation? If you know, be sure and notify A. W. Morrison of Socony-Vacuum Oil Co., New York, chairman of the Exhibit and Booklet Committee of NAIDM. It seems that members of this committee have been at odds and almost at each others' throats for some time trying to define this simple word in the light of NAIDM products so that they can complete a booklet for use of the membership. Don't bother consulting Webster. They passed up his definition long ago!

* * *

"Under separate cover, we are sending you a dispenser and a gallon of liquid soap. Now quit squawking about messenger boys stealing the soap out of your men's room." This from Clarence Weirich of C. B. Dolge & Co., Westport, Conn. So hereafter, our editorial hands will be washed exclusively with Savon fluide hyacynthe de Dolge.

* * *

Remember about ten years ago when the "famous German soap chemist" visited America and sold his soap "stretching" process to soapers far and wide? If he could return before 1945 is out, he would really see some raw material "stretching" which is really stretching. And incidentally, what about the thousand and one patents covering soap fillers all the way from glue to potato pulp?